

FORESTRY

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## SIERRA CLUB BULLETIN.

VOL. VI.

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NO. I.

## THE SIERRA CLUB'S ASCENT OF MT. RAINIER.\*

BY EVELYN MARIANNE RATCLIFF.

Every year the Sierra Club gives the lover of natural scenery an opportunity to gratify his taste. From the Club's camp in Paradise Valley I had my first experience of a formidable mountain climb. Pitched on the slope of Mt. Rainier at an altitude of about 5,500 feet,—almost at timber-line,—it was within a few moments' reach of the Nisqually Glacier, which at that point is a mass of begrimed ice and névé, furrowed crosswise with crevasses and lengthwise with moraines as far as eye can see. Beyond Paradise Valley looms the Tatoosh Range, a beautiful little series of summits, half-covered with a resplendent mantle of snow when we saw it. Indeed, its attractions were found so irresistible that we decided to climb its highest peak soon after establishing our main camp. A most perfect day's outing it proved to be; enough snow to make us realize its height and enough rock-work to add the spice of danger to the climb.† The summit of Pinnacle Peak afforded a magnificent view of Mt. Rainier, whose lofty white cone flung a challenge to us across the valley. From our cloud perch we scanned the great mountain narrowly, for its conquest was to be our main effort, and our respect for its height grew as we looked.

The start was made on July 24th, a day when the peak was wearing not a vestige of the cloud-cap that is

\* For a narrative of the entire outing see the Report of the Outing Committee, page 50, *infra*.

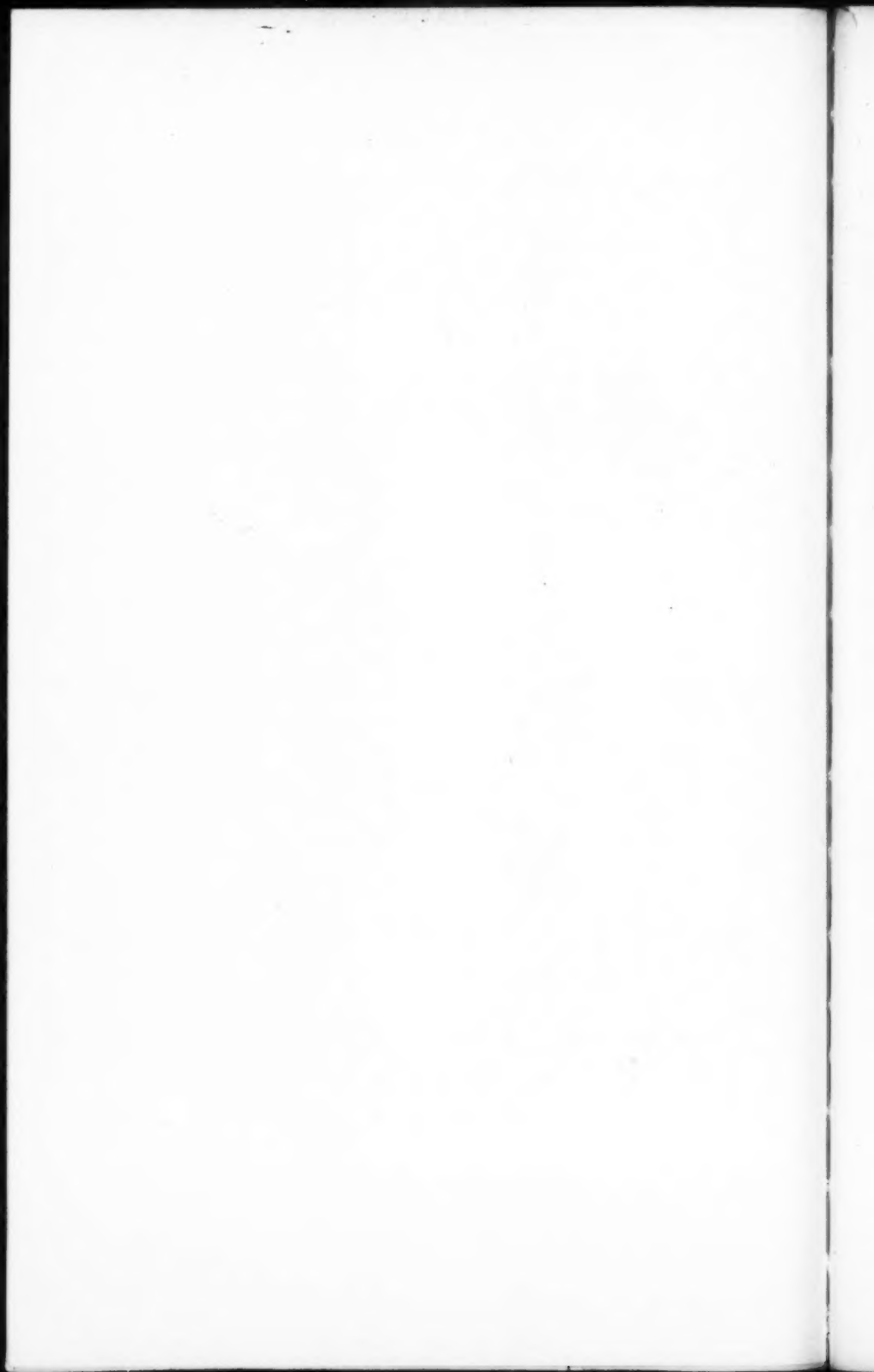
† See the article, "Sky-Line of the Tatoosh Range," in this number.

the usual warning for storms. Fifty-three persons, headed by Mr. Parsons, lined up in camp and were formed into five companies, each with its own leader. There were also the scientists who under Mr. McAdie's guidance were to measure the height of the mountain. A goodly array of mountaineers we were,—a greater number than had ever before attempted the ascent, and greater probably than ever will again. The mountain is not without dangers, and as the risk was increased by the size of the party it was owing only to the great vigilance of the leaders that our safety was secured. An afternoon's struggle in the snow was our first day's programme. To our left stretched the Nisqually Glacier, growing whiter and more picturesque as we climbed higher and higher. Every now and then an avalanche came hurtling down on the glacier. As we stopped from time to time for breath, we had leisure to watch the great white field, and were delighted if we caught sight of the falling mass before its boom reached our ears. What an awe-inspiring sight it is to see a thunderbolt of ice and snow flash down a mountain-side! At one time a flock of mountain goats came into view, and we observed them as closely as the distance would allow. We now began to reach altitudes from which it was possible to appreciate more fully the greatness of the glacier, and to understand how the crevasses came to be formed by the uneven motion of the ice-stream down the sloping channel. About a thousand feet below Camp Muir the pack-train unloaded its freight, and we all carried our sleeping-bags, the men carrying also the commissary supplies. On reaching the camp, a rocky slope surrounded by snow, at an altitude of about 10,000 feet, our first task was to move the boulders into places where they would interfere as little as possible with the coming night's sleep. Unfortunately the little remained a good deal in spite of our best efforts. But I was fortunate enough to secure a place surrounded by a kind of rock wall, so that there was no danger of being chilled by



ORGANIZING FOR CLIMB OF MT. RAINIER.  
RESTING ON CLIMB—OVERLOOKING NISQUALLY GLACIER.

From photographs by E. T. Parsons, 1905.





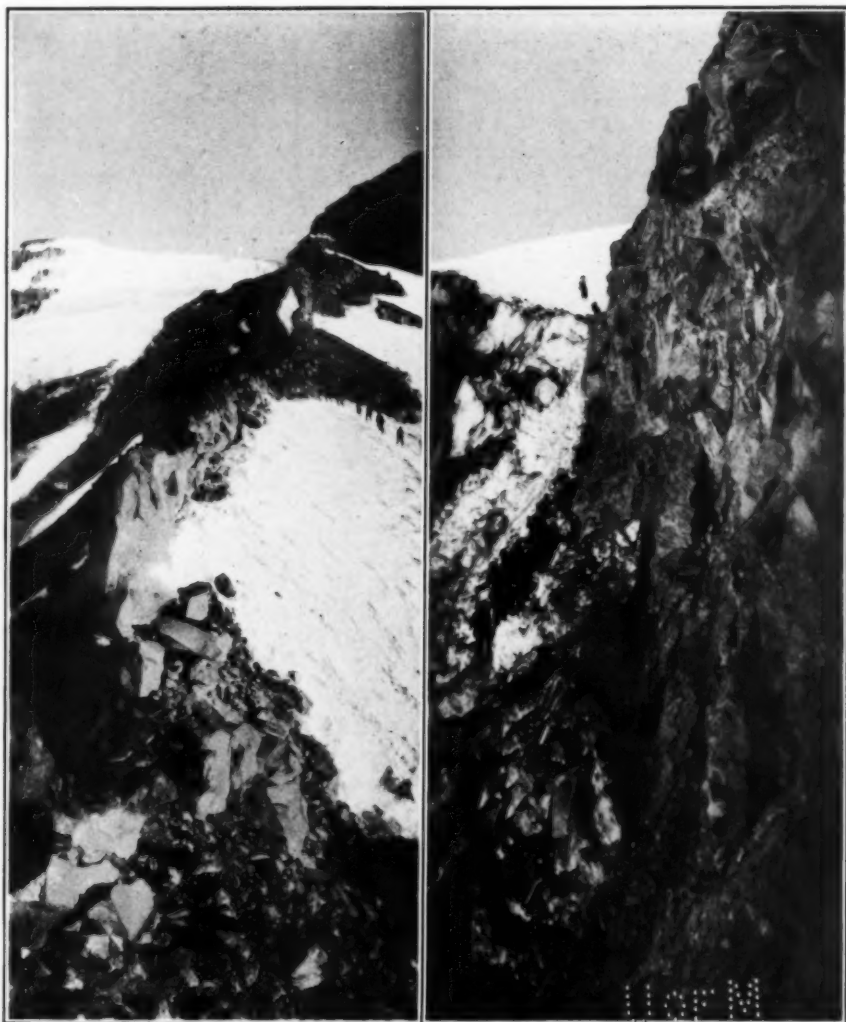
the wind. It was then shortly after 6 o'clock, and as the sun disappeared behind the rocks the snow became quite hard and crisp—evidence that the frost had already set in. Against the cold we were prepared, for we had been informed that this would be the severest of our hardships during the climb. But as it grew colder and colder I began to think with some misgiving of my ten-pound sleeping-bag, which consisted merely of an eiderdown quilt covered with denim and a thin oil-silk water-proof bag. This misgiving proved groundless, however, for I slept away the night perfectly warm in my sequestered nook. Judging by the cheerful countenances seen the next morning, the rest of the party also suffered no hardship.

At supper-time, while waiting for hot soup, tea, and beans,—a truly sumptuous meal to be cooked on a Khotal stove\* and served amid such surroundings,—we had ample time to enjoy the magnificent view. The eye was first attracted by three snow-peaks standing out clearly in the distance, with the sunset glow illuminating them in a most wonderful way. There was Hood, a mountain of perfect conical form, flanked on either side by St. Helens and Adams. Almost at our very feet lay the Tatoosh Range, the scene of our conquest a few days before. How utterly insignificant it now looked! Our eyes unconsciously wandered back to the three imposing peaks, and a sense of exhilaration took possession of us as we reflected that we were about to conquer a greater than any of these.

With the moon still high in the heavens, we rose, breakfasted, and, as dawn slowly appeared, began the ascent. From now on it was hard work. The climbing of Rainier is not a holiday jaunt. As far as Gibraltar Rock it was a constant alternation between rock and

\* It should interest mountaineers generally to know that two small single-burner Khotal oil-stoves, weighing only seven pounds each, an improvement on the Primus stove, cooked for the sixty-two people in camp that night a supper of soup, tea, and canned pork and beans, and breakfast the next morning, with a total consumption of less than one-half gallon of kerosene oil.

snow climbing, in the former our main care being to avoid dislodging rocks, and in the latter to choose our footholds so as to keep from slipping. On the rocks it was at times necessary for two or three persons only to proceed simultaneously, in order to avoid as much as possible the danger of precipitating rocks upon the heads of people below. There were places on the snow where a dexterous use of the alpenstock might have rendered a misstep harmless. But there were places also where the slope was so nearly vertical that no power on earth could have arrested a falling climber. At Gibraltar still greater obstacles confronted us. On the west side of the rock there was a narrow ledge from which a steep talus fell away, terminating abruptly over a precipice. This ledge had to be footed with great care, for a good part of it was covered with ice, and nothing could have saved the luckless person who had slipped there. In places of this kind one element of danger against which a mountaineer's skill is powerless consists in cannonades of rocks started by the action of the sun on frosted surfaces. Fortunately our early start obviated this danger in large measure. But we lost no time in passing this point. The end of the ledge led to a steep chute of glacial ice. Here the leader's ice-ax came into play, for every step had to be cut. Then a rope was passed up, and with the aid of that and our alpenstocks we reached the top of the slope safely. Not, however, without the utmost precautions, for here also a misstep would have been fatal. Arrived at the top of Gibraltar, we stopped to rest a moment in a nook sheltered from the chilling wind and suffused with the first rays of the rising sun. Presently another great snow-field was under our feet. Our progress now was slow and interrupted by frequent short halts to enable us to catch our breath. The effect of the altitude began to tell in the effort that had to be put forth at every step. Despite the warmth of the sun's rays, a strong westerly wind chilled us to the bone. Fortunately it acted as a spur also to our flagging energies, and we



APPROACHING GIBRALTAR (SECOND DAY).

PASSING GIBRALTAR.

From photographs by E. T. Parsons, 1905.



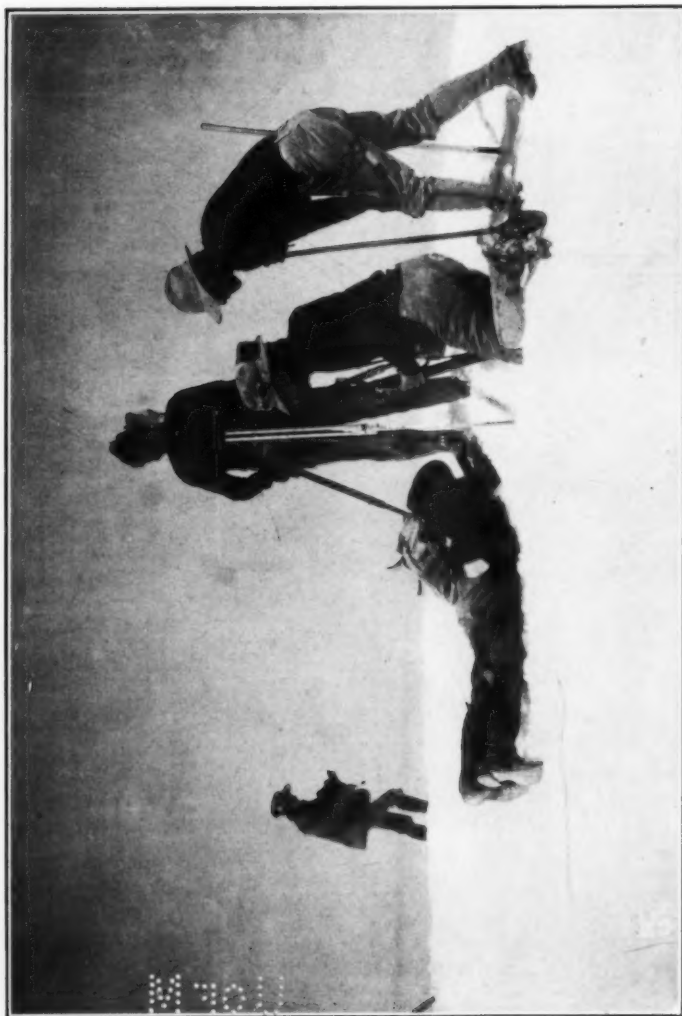
PARTY ON SNOW-FIELDS (FIRST DAY).  
POINT OF ARRIVAL AT CRATER ON SUMMIT OF MT. RAINIER (SECOND DAY).  
From photographs by E. T. Parsons, 1905.

tramped on steadily until a ridge of volcanic rock told us that we had reached the rim of the crater; for Rainier once upon a time was a great fire-mountain whose gleaming streams of incandescent lava and lofty pillar of ash-laden smoke must have made its summit a much more impressive sight than the silent white snow-fields that now choke its smoldering fires. Only a mountaineer can appreciate the sense of exhilaration with which we contemplated the vast expanse of the crater and told ourselves that we had conquered the kingliest among all the mountains of the United States.

It was then 9:30 A. M. The climb had occupied us only five hours from Camp Muir, a fact upon which we reflected with much satisfaction, since we had expected it to take at least seven. It was impossible to remain exposed long in the gale of wind that was sweeping the summit, so we sought shelter behind some rocks, and each made an onslaught on the lunch which a Sierran always carries in a bandana handkerchief tied to his belt. The leisurely disposition of the lunch was followed by a postprandial tour of investigation around the crater. Crossing half a mile of snow that filled the basin of the crater, we reached the highest point on the summit. Puget Sound, numerous valleys, and ranges of hills could be seen extending for miles from the mountain. But on the whole this view suffered by comparison with that which we had enjoyed the night before from Camp Muir. The height of the mountain is about 14,528 feet. The timber-line is reached at about 5,500 feet. This leaves a zone nearly two miles in width across which the eye has to travel without the aid of objects that usually furnish a sense of perspective. A slight haze also veiled the distance so that this part of the trip left some expectations unrealized. Smoke still issues from the crater in some places near the edge, and sulphurous gases are emitted in great quantities. But the mouth of the crater has been filled with snow, which forms an almost level field across the center.

The descent was begun about noon, and proved harder work than I at least had anticipated. No sliding could be attempted on account of crevasses in some places and the steepness of the snow-slope in others. Only a few weeks ago one of the guides had slipped on the snow not far from Camp Muir. Having dropped his ice-ax, he was unable to stop himself. He slid down the snowy slope until he came to a wide crevasse which he could not avoid, and consequently tried to jump. Unfortunately he struck the other side of the crevasse too low, and went down, breaking his legs as he fell. The character of the climbing at times was such that a similar or worse misadventure had to be reckoned among the possibilities; for a steep incline would be sure to end with a crevasse, a rock talus, or a precipice. Consequently we redoubled our precautions, planting our alpenstocks with care, and stepping with precision. Once more on the icy slope near Gibraltar we used the rope, and descended very slowly and cautiously. Arrived under the brow of the great cliff, we found it necessary to make all possible haste; for, seeing an immense boulder break off above and go thundering across our path, we realized the danger of our position. By keeping close to the wall it was possible to lessen somewhat the chances of being hit. Fortunately all passed the end of the ledge in safety. At Camp Muir a brief halt and a cup of tea restored our flagging energies. The worst was over. Not long thereafter we marched into camp with the grateful feeling of accomplished purpose and thrilling memories of a hardy pastime.

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TAKING MEASUREMENTS FOR ALTITUDE ON SUMMIT OF MT. RAINIER.

From photograph by Asahel Curtis, 1905.



MT. RAINIER, MT. SHASTA, AND MT. WHITNEY  
AS SITES FOR METEOROLOGICAL  
OBSERVATORIES.

BY ALEXANDER G. MCADIE.

In 1903 an ascent of Mt. Whitney was made by the writer, and a report upon its availability as a site for meteorological research published in the *SIERRA CLUB BULLETIN*, June, 1904. The elevation 14,515 feet, then determined barometrically, was thirteen feet higher than the value determined by precise levels in August, 1905, by the U. S. Geological Survey, Mr. R. A. Farmer, topographer.

During the present summer ascents of Mt. Rainier and Mt. Shasta were successfully made. Mercurial barometers, a boiling-point thermometer, wet- and dry-bulb thermometers, and other apparatus were carried to each summit. The barometers were the same as those used at Mt. Whitney. Check readings were made at San Francisco and at Portland; and simultaneous readings for sea-level conditions at Seattle, Tacoma, Portland, Spokane, Red Bluff, and Eureka, through the courtesy of the officials in charge of the Weather Bureau offices in those cities. Professor J. N. Le Conte,\* of the University of California, checked the readings at both peaks; and Messrs. Franklin, Knapp, Hutchinson, Gardner, Gould, and Elston assisted.

Camp at an elevation of 5,500 feet was made in Paradise Valley on the southern slope of Mt. Rainier July 16th-31st. Leaving camp July 24th, the night was spent at Camp Muir, and on July 25th the ascent completed. Starting from Sisson, Mt. Shasta was climbed on August 4-5, 1905.

\* Professor Le Conte also checked the readings made on summit of Mt. Whitney in 1903.

The coordinates of the peaks are:—

Rainier .... $46^{\circ} 51' 5''$  N.,  $121^{\circ} 45' 28''$  W.

Shasta ..... $41^{\circ} 24' 28''$  N.,  $122^{\circ} 11' 49''$  W.

Whitney ... $36^{\circ} 34' 33''$  N.,  $118^{\circ} 17' 32''$  W.

The elevations are:—

Rainier .....14,394 feet, approximately.

Shasta .....14,200 feet, approximately.

Whitney .....14,502 feet, true.

These peaks, it will be noted, are so located as to offer an ideal opportunity for studying weather conditions on the Pacific Coast. They stand like three sentinels in a stretch of seven hundred miles, at such distances from one another and so related to the orography of the coast that an almost unparalleled opportunity is afforded for obtaining a cross-section of the general storm tracks and prevailing wind direction at levels extending almost from the sea to a height of 4,420 meters (14,500 feet). A chain of high-level observatories is particularly desirable on the Pacific Coast, inasmuch as the general climatic conditions are essentially different from those of other sections of the country, being in fact materially modified by the proximity of the ocean and the extremely diversified topography of the coast. As stations for research and original investigation of problems connected with the physics of the atmosphere, these peaks are exceptionally well adapted. The most northern, Rainier, lies directly in the mean storm-track, and permits of experimentation upon cloudy condensation in the free air, rainfall, and snowfall throughout the entire gamut of pressure and temperature conditions. The most southern peak, Whitney, is located in a region probably the driest in the United States. With nearly half of the sensible atmosphere below its summit and a minimum amount of water-vapor present, no better site could be found for investigating the part played by the atmosphere in the absorption of solar energy. The discoveries made at all lower-level observa-

tories, giving as they must results obtained after the passage of the radiant energy through a considerable stratum of atmosphere, can only be completely verified by comparison with the results obtained at levels approximately above the sensible atmosphere.

Again, in connection with the radio-activity of air, it is believed that conditions are very favorable for experiments on the ionization of the upper air strata and the part played by electrons as nuclei for condensation.

But chiefly in connection with the practical question of improving the forecasts over the western half of the country is it important that observatories should be established on these peaks. The Pacific Coast is essentially a region of marked climatic contrasts. Within short distances great differences are found. In other words, local climates are prevalent to a marked degree in this Western country, and there is little of the general uniformity of temperature and other conditions prevailing east of the one hundredth meridian. It is believed that dynamic compression of the air forced down mountain-sides and into long narrow valleys plays an important rôle in determining local climates.

"Föhn" or "Chinook" conditions must be studied from the vantage-ground of high-level stations. Perhaps the most destructive single condition in California (not excepting a severe frost, or an exceptionally severe storm) is the norther of the Great Valley, or the kindred wind known as the Santa Ana of the region south of the Sierra Madre. Handicapped as the forecaster is on the Pacific Coast by a paucity of reports from the west, it is all the more necessary to obtain reports in other ways. Mountain winds play no inconsiderable part in the meteorology of the coast. We have the action of the wind in its general easterly drift, the air circulation due to the procession of passing disturbances, and, more pronounced still, the localized wind-currents or forced draughts up and down the mountain-flanks and through the numerous valleys. It is well known that many sta-

tions located in valleys are now of doubtful service to the forecaster because the reports do not indicate true cyclonic wind movements.

It is of course no easy matter to erect, equip, and maintain mountain observatories, and while it might be possible to carry out the plan as outlined, it would probably be much better to place self-recording apparatus on the summits, properly exposed, and establish a series of camps at levels of five, eight, and twelve thousand feet.

#### ELEVATION OF MT. RAINIER.

Columbia Crest, summit of Mt. Rainier, July 25, 1905, 11 A. M. to 12 noon. Observers, J. N. L. and A. G. M. Mercurial barometers, Green standard No. 1664 and No. 1554; four readings, 17.614, 17.616, 17.630, 17.632 inches. Temperature, mean, 39° F. Mean pressure, corrected for temperature, instrumental error, and gravity, 17.663 inches. Mean temperature of air column, obtained from readings at summit and at sea-level, 50° F.

Sea-level reading, mean of Tacoma, Seattle, Portland, and Spokane, 29.960 inches.

$$h - h_0 = 56517 + 123.3 \theta + .003 h \\ (1 + 0.378 \frac{e}{B}) (1 + .0026 \cos 2 \phi) \log \frac{B_0}{B}$$

which may be written

$$\log 29.960 = \log 17.663 + \\ \frac{h - h_0}{56517 + (123.3 \times 50^\circ) + .003 h} (1 - \beta) (1 - \gamma) \\ h = 62725 \times 0.229478 = 14,394 \text{ feet.}$$

The boiling-point as determined on the south rim of the crater, probably one hundred feet below the true summit, was 86°.4 C. (187°.4 F.). The equivalent pressure would be 17.960 inches. We shall probably not be

greatly in error if we assume that the boiling-point on the summit is about  $186^{\circ}.8$ , and the equivalent pressure 17.73 inches. A sling psychrometer gave the following:—

Dry, $37^{\circ}.0$ F.	$36^{\circ}.4$	$36^{\circ}.5$	$36^{\circ}.5$	$37^{\circ}.0$	Mean, $36^{\circ}.7$
Wet, $32^{\circ}.0$	$28^{\circ}.0$	$25^{\circ}.0$	$24^{\circ}.2$	$25^{\circ}.5$	" $26^{\circ}.9$

The dew-point was approximately  $10^{\circ}$ , vapor tension 0.07 inch and  $\frac{e}{B} = .0004$ .

#### ELEVATION OF MT. SHASTA.

Summit of Mt. Shasta, August 5, 1905, 12 noon to 1:30 P. M.; six readings, 17.988, 17.990, 17.992, 17.977, 17.962, 17.980 inches. Mean pressure, corrected for temperature, instrumental error, and gravity, 17.993; mean temperature air column,  $60^{\circ}$  F. Sea-level readings, Eureka, San Francisco, 30.000 inches.

$$h = 63958 \times 0.222017 = 14,200 \text{ feet.}$$

The boiling-point at the summit was  $86^{\circ}.5$  C. ( $187^{\circ}.7$  F.). Equivalent pressure, 18.080 inches.

The height of Shasta given on the Geological Survey sheet is 14,380 feet (intended for 14,389 feet); but this elevation was determined more than twenty years ago by combining the results obtained by vertical angles and mercurial barometers. In a letter dated August 24, 1905, the Acting Director of the Survey states that "doubt is thrown on the value from the fact that an exact elevation of the base station was not known, and the methods used would now be considered only approximate."

#### MISCELLANEOUS OBSERVATIONS.

The following table of boiling-points may be interesting. It should, however, be noted that a strong wind was blowing when the readings were made at Mt. Rainier on the south rim of the crater.

Whitney, 186°.47 F. (Hallock 1903).

Rainier, 187°.4 F. (crater readings).

Estimated summit reading, 186°.8.

Shasta, 187°.7 F.

Muir's Camp, 194° F.

Estimated height, 10,000 feet.

Paradise Valley, Sierra Camp, 202°.4 F.

Estimated height 5,700 feet.

Horse Camp, Mt. Shasta, 198°.5 F.

Estimated height, 7,900 feet.

Observations based upon pressure determinations are confessedly less exact than those made by vertical angles or by levels. It is fully recognized in the above determination that the mean temperature of the air column may be in error. If air were at perfect rest, which it seldom is, a mean value might be obtainable; but on both dates mentioned we observed a marked stratification of the air, and under such conditions temperature and humidity values are indeterminable. Above the level of 10,000 feet the drift of the air appeared to be entirely different from the drift of the lower level. The humidity values, in the opinion of the writer, cannot be properly obtained without a series of simultaneous readings at probably not less than five points in the air column.

#### HISTORICAL.

The first estimate of the height of Mt. Rainier was made by Captain George Vancouver on Saturday, May 26, 1792. He had named the "round snowy mountain" on Tuesday, May 8th, after his friend, Rear-Admiral Rainier. No one had a better right to stand sponsor. The names which he gave to the peaks, bays, channels, and islands of the North Pacific coast,—Hood and Baker, after Lord Hood and Admiral Baker; Puget Sound, after his first mate, Peter Puget; the Straits of Georgia and Queen Charlotte Sound, after king and queen,—have all been graciously accepted and remain

unquestioned, save one, Mt. Rainier. In the city of Tacoma, the mountain is called Mt. Tacoma. Long before the city existed, Vancouver (first white man to see that section) wrote of the country round about: "The forest trees gradually decreased and the perpetual clothing of snow commenced, a horizontal line from north to south along the range of ragged mountains, from whose summit Mt. Rainier rose conspicuously and seemed as much elevated above them as they were above the sea."\* At that time of the year the snow-line would be approximately seven thousand feet above sea-level. Hence Vancouver's estimate of double this height was not a bad one. Moreover, Vancouver first gave the coordinates of the mountain: latitude,  $47^{\circ} 3''$  N., and longitude  $238^{\circ} 2''$  ( $-360^{\circ}$ ). There is also an excellent sketch of Mt. Rainier made by J. Sykes, May 17, 1792.

The heights of Mt. Rainier commonly given are: E. S. Ingraham, 14,524 feet; Geo. F. Hyde, U. S. Geological Survey, 1896, 14,519 feet; McClure, McAllister, 1897, 14,528 feet.

Not until a line of precise levels shall be run will the true height of this kingly mountain be determined, and it may be pointed out that even then snowfall may modify the figure slightly. Before the top of the mountain was blown off and the crater formed, the summit was probably fifteen hundred feet higher than Columbia Crest.

The Acting Director of the Geological Survey, under date of August 24, 1905, states that the best determination of the height of Mt. Rainier by one of the topographers in 1902 is 14,363 feet above mean sea-level. This value was obtained by means of vertical-angle foresights taken from triangulation stations thirteen to twenty-nine miles distant from Rainier. The elevations of these stations were well determined from spirit-level observations.

\* *A Voyage of Discovery Around the World.* 6 volumes. London, 1801.

Of all the measurements which have been made in connection with the height of Mt. Rainier, the one which possesses the most pathetic interest is that made by Professor Edgar McClure of the University of Oregon on July 27, 1897, at 4:30 P. M. A Green standard mercurial barometer, No. 1612, was successfully carried to the summit, and readings carefully made. The reading, corrected for instrumental error and temperature, was 17.708 inches; with an air temperature of 29° F. Returning from the summit, Professor McClure lost his life in the act of giving warning to others to avoid the peril of his position. His body and the barometer were subsequently recovered, and the results discussed by his colleague, Professor McAllister. McClure's work in this and other directions was of a high order of accuracy, and probably no one was better fitted to attempt the task which he set for himself. The value obtained, reduced according to present methods, gives an elevation of approximately 14,454 feet. This value is only sixty feet in excess of the value given above, determined by the writer on July 25, 1905,—namely, 14,394 feet.



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TATOOSH RANGE ABOVE THE CLOUDS, FROM SIERRA CLUB CAMP, PARADISE VALLEY.

From photograph by E. T. Parsons, 1905.

THE SKY-LINE OF THE TATOOSH RANGE,  
MT. RAINIER NATIONAL PARK.

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BY MARION RANDALL.

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On the afternoon of the 16th of July nine of us Sierrans who have had many days of mountaineering together sat on the top of Pinnacle Peak and determined to our own satisfaction that that mountain did not deserve the honor accorded it of being the highest point of its chain, but that a little-considered, and, as far as we knew, absolutely unexplored, peak at the farther end of the range was the real summit. We thereupon christened it Unicorn Peak, for reasons sufficiently evident, and resolved that before many days should have passed we should climb it and attain the actual summit of the Tatoosh Range.

This little mountain chain, while rising only to the elevation of seven thousand feet, is extremely picturesque. Formed of a dark volcanic rock, and with its steep northern slopes deeply buried in snow, its abrupt, straight wall, running from east to west for some ten miles, presents difficulties that many a range twice its size cannot boast. We had watched it often from camp at sunset, when the long purple shadows were thrown across its rosy snow-fields, or with its black pinnacles breaking through the storm-clouds into the sunlight again, until we knew every crest and col by heart. So it was not difficult to map out our line of exploration.

We left camp, fifteen strong, after 8 o'clock on the morning of the 20th, crossed the low ridge above the commissary, and swung down the long, open slope to the Paradise River. Across the stream, where the woods grew closer, the ground was carpeted with soft mosses and banks of starry erythronium lilies. We climbed on,

from photograph by E. J. Parsons, 1905.

brushing through the dewy branches of the underwood, until, emerging in a little open place, we caused considerable perturbation among a large colony of whistling marmots who had been disporting themselves among the rocks of a great talus slope along its eastern margin. At our approach they shambled into retirement as speedily as possible—all except a few portly members of the community, whose dignity, or possibly whose curiosity, forbade flight. They sat mildly regarding us as we crept closer, their occasional half-hearted impulses to escape being checked each time by a sharp whistle from a member of our party, which invariably excited enough interest to cause them to forget their project. After paying our respects to the patriarch long enough to take his picture, we proceeded on our way.

We crossed the wooded hill and descended its farther side to a lake that lay at the base of the Tatoosh Range. Everywhere flowers were spread, along the little water-courses, bending down close to the lake shore, and growing tall and rank in the path of an old fire,—patches of valerian and columbine and crimson paintbrush, and the tall, white, spearlike blossoms of the squaw-grass trying to cover the unsightly blackened logs that crisscrossed the ground for miles.

There is a prodigal touch to nature that puts our prudent foresight to scorn. The trees that don their bravest apparel to meet the winter frosts, the skies that spread such a wealth of color to greet the oncoming night, the flowers that bloom most riotously where the snow lies longest and make the very brevity of the summer an excuse for their lavish profusion,—how these shame that spirit of little faith which would make us niggards of our joy, afraid to give of what happiness we have lest the morrow find us bankrupt! But something of Nature's spendthrift humor enters into every day spent in seeking the high places. A cheerful recklessness assumes control of our usually prudent minds. We take no thought for to-morrow's aching bones; we only know

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ON SKY-LINE TRAIL.

From photograph by E. T. Parsons, 1905.

that the day is young, and that we, body and mind, feel as fresh and unjaded as the day, that the spirit of adventure is abroad in the land, and that the gladness of the sunshine has taken possession of our souls.

We loitered along like a band of children, making merry over every trivial happening, as when the inlet of the lake proved a little embarrassing for some of us to cross. Those who had waterproof boots chose a shallow place and waded, but one spry maiden whose footgear had seen three summers of mountain wear elected to jump. She landed safely, amid cheers, but her lunch, not faring so well, fell in midstream, and was fished out dripping at the end of an alpenstock with all the *empressement* of a deep-sea rescue.

At a point several miles from our objective peak we started to climb, taking the most practicable route to the snow-fields and passing up through them to the crest. Here we stopped to don snow-goggles or veils and to put on the "war-paint" that protected our faces from snow-burn, and then, with a fresh grip on our alpenstocks, set forth eastward on the "Sky-Line Trail." Starting from the saddle below Pinnacle, we skirted the edge of the peak to the east. Pink heather and white cassiope bells spread close to the snow-line, and the stunted firs, growing on the more open southern slope, crept to its brow to take a peep northward into the world of ice and snow.

Instead of lying almost in line with Pinnacle, as it appeared from camp, Unicorn is set back from the main ridge nearly two miles. Another divide, running almost at right angles in a southerly direction, connects Unicorn with the longer range, and at the intersecting point of the two ridges there is a low peak. High up on this, feeding in the open near its summit, we had a good look at two deer, possibly an eighth of a mile away. They scented our approach almost immediately, and set off at a lively pace around the peak, disappearing finally over the divide very close to the place we had marked for

our crossing. They were not destined to escape our acquaintance so easily, however. Evidently they were not used to Sierra Club ways, and, having put a mountain between us, deemed themselves safe from further disturbance. So one of them was composedly finishing his noon-day meal just over the brow of the divide; and we, chancing, for a wonder, to be moving rather silently, came within twenty feet of him before he realized our presence. Our surprise, though hardly less than his own, did not take so spasmodic a form. The five or six stiff-legged leaps that took him across the snow into the cover of the dwarf firs could not have been excelled by any jumping-jack in the land. After hearing all one's life such expressions as "graceful as a deer," and "she ran like a young deer," it is both disappointing and disillusioning to have one's first specimen of a real live wild deer go off in a series of rapid-fire hops like that; it destroys one's faith in the poets.

Not very long after this we stopped for lunch, which we finished with business-like rapidity, realizing that the afternoon was upon us, and that, pleasant though the loitering on the sky-line might be, it behooved us to hasten if we meant to conquer our peak. It was past 1 o'clock before we reached the base of the saddle between Unicorn Peak and the high shoulder to the west. Here we held a short council of war. The snow-field was exceedingly steep—so steep that it was evident much time would have to be consumed in the cutting of steps. On the other hand, if we took the alternative offered, and, circling the snow-field, made the approach by way of the shoulder, we ran the risk of encountering precipitous cliffs that might effectually bar our progress and compel us to retrace our way. We finally decided to try the snow-field.

For some little distance it was easy enough, but all at once the slope tilted itself up so that it was no longer safe to trust to the footing afforded by the ice-calks in our shoes or to the balancing power given by our alpen-





Unicorn Peak.

SKY-LINE TRAIL OF THE TATTOOSH RANGE.

From photograph by E. T. Parsons, 1905.

1000 1000 1000 1000

stocks; it was necessary to begin the dolorous task of cutting steps. What mountaineers term ice-steps are generally gashes about the size of an ordinary blaze on a tree; but in this case we had roomy landings that two mountain boots could occupy at once. The first man chopped the gashes with an ice-ax, the second man amused himself by enlarging them with a hatchet, while the third scratched away the snow with both hands, like a dog after a squirrel. This excavating process was an agreeable pastime for those in front, but we poor creatures back in the line stood for two mortal hours with a blazing sun beating on our heads, but with our feet gradually freezing, and mounted upward one slow step at a time. Part of the way our rate of progress was measured off by the chanting of a doleful chorus, since become endeared by association to the heart of many a Sierran, whose final word, "Change!" invariably was the signal for a one-step advance. And all the while the slope grew steeper and the rocks at the foot of it looked the more ominous, while the speed of the chunks of ice and snow that came hissing down past us from the choppers gave an unpleasant indication of the momentum that might be gained by a large body in the act of falling.

From the crest of the saddle the snow fell away on the southern side to meet a high rock wall, broken down in one place to form a perfect window, through which one looked out straight into the distance,—a wide blue forest country stretching to meet Mt. Adams, whose snows were already touched to gold by the afternoon sun. The pastelle-like softness of the distant picture, so unexpected amid the rough-hewn grandeur of the setting, thrilled the fancy as with a glimpse into the world of dreams that lies beyond the horizon,—“a turn, and you stood in the heart of things.”

But the step-cutting had taken so long that we could not afford to linger. Stacking our alpenstocks at the edge of the snow, we began the final rock climb to the summit. There was nothing difficult about this until the

Unicorn itself was reached, a steep, flat-topped mass rising from fifty to seventy-five feet above the rocky, rounded backbone of the summit. Several of the best mountaineers set to work at once on an attempt to climb this horn, a task which proved unexpectedly difficult,—in fact, from the point first chosen, impossible for a single, unaided climber, except for one man, who combined a longer stretch of arm with more than usual strength and skill. He wormed his way up through a cleft or chimney, hands, elbows, knees, and back all working at once, and clambered out on a narrow ledge from which he could reach down a helping hand to the scramblers below, whose futile attempts to find hand- and footholds made them look ludicrously like spiders imprisoned under a glass trying to scale its smooth sides. It was a very tough little piece of climbing, far outclassing any of the rock-work encountered on Rainier.

Two of the girls also decided on going to the summit of the horn, while about half of the party remained on the ridge watching their more strong-minded sisters and more agile brothers being derricked to the goal. A much easier way was later discovered, where the least-skilled climber could readily have made the ascent, but, rather to our regret afterwards, we decided that the approaching evening made it inadvisable to spend any more time on the summit, and so left without attempting it.

Before the more daring climbers descended from their perch, they caught sight of a band of mountain goats, or mazamas, on the snow to the south. One ambitious photographer spent all of his resting-time on the summit in stalking the goats. There were fifteen of them, some on the snow, the rest lying on a grassy slope. Two of them allowed him to get near enough to snap their picture. The great increase of these animals since the Mazama Club outing of 1897, after which the Mt. Rainier National Park was established, forms a strong argument in favor of the proposed game refuges. Three times bands were seen this summer, and it was a common





MT. RAINIER AND THE UNICORN FROM RIDGE.

From photograph by E. T. Parsons, 1905.

occurrence to find tufts of their soft, pale buff-colored wool clinging to the lower branches of trees on some rocky headland.

The panorama from Unicorn, in altitude an insignificant peak, excels that from Rainier, as there the mountain itself is so stupendously big and impressive that it flattens all its surroundings into insignificance. But on Unicorn one is set in the midst of a wilderness of craggy peaks and snowy ridges; the great cones of Adams, St. Helens, and Hood, and the almost invisible form of Jefferson bound the horizon on the south, while northward Rainier closes in your view, the whole bulk of it from the wooded meadows that stretch down to the Paradise River up to the icy crown of Columbia Crest, 14,528 feet above the sea.

Our descent was uneventful, but wonderfully beautiful in the soft coloring of the late afternoon. A few timid attempts at snow-sliding on the part of the inexperienced Californians furnished some amusement to those better trained in the art, and proved a welcome, if somewhat chilling, rest from the rapid downhill walking of which most of our homeward trip consisted.

A "Sky-Line Trail" is a happy one to follow. There are none of the heart-breaking descents of wearily climbed ridges, none of the restless fevers of curiosity to know what lies over the next hill that beset a cross-country walk. The country lies widespread before you on either hand, and you have the comfortable assurance right before your eyes that in a day's journey there is no more desirable crest to be found than the one on which you are standing. And when at the end of a ridge walk you find a peak difficult enough to give the whole trip the spice of adventure, an unexplored peak to give you the joy of the pioneer as well, you feel that your day on the sky-line is perhaps longest to be remembered among all the days of the summer.

THE EFFECT OF THE PARTIAL SUPPRESSION  
OF ANNUAL FOREST FIRES IN THE  
SIERRA NEVADA MOUNTAINS.

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BY MARSDEN MANSON.

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Prior to 1849 the forests and even the foothills of the Sierra Nevada Mountains were annually burned over by the Indians. This process effectually suppressed seedlings, and, as it had manifestly been practiced for many generations, the forests were mainly composed of old trees, many badly burned at the butt. The scattered groves of Sequoias, with their hoary fire-scarred trunks and devoid of middle-aged and young trees, the clear floor of the Yosemite Valley, and the great forests of sugar and yellow pine, fir, spruce, red cedar, etc., without seedlings or young growth abundantly attest the prevalence of this practice of annually burning off the leaves. These light fires gave open forests through which one could readily see for great distances.

So impressive were these forest vistas and so majestic were the great boles that poetic and impracticable natures at once accepted the Digger Indian system of forestry as unquestionably the natural and correct one. This impression has been strengthened by two facts: first, the absence of a definite knowledge of what forestry really is; secondly, by the establishment of a far worse system than that of the Digger Indian,—namely, the ruthless cutting out of the trees and burning over the areas, designedly, to give better pasture to sheep, or, accidentally, after a heavy growth of young trees had started.

The writer has been familiar with the forests of the Sierra for many years and has quite recently traveled through several hundred miles of forest areas which



were previously known to him. In these trips it was distinctly observed that where forest fires had been suppressed, whether the area had been cut over or not, young trees of species not previously found as young trees were beginning to find foothold. This is notably brought out in the Tuolumne grove of sequoias. Here in early visits not a single specimen except full-grown, dead, or dying trees could be found. On September 1st of the current year a young sequoia was found fifty feet to the north of the branch road which runs through the trunk of the dead giant and about one hundred and fifty feet from the forks of the road nearest Sequoia (Crocker's Station). This tree is the largest of the young trees in this grove, and has the following measurements: Height, 23.8 feet; circumference one foot above the ground, 28 $\frac{3}{4}$  inches; circumference five feet above the ground, 20 $\frac{3}{8}$  inches; spread of branches, 12.9 feet. Some one, ignorant of its species and import, had whacked off the lower branches and tied his horse to it. We carefully marked it with a ring of stones, cut out or topped all inferior trees around it, and it is hoped that putting its exact measurements at the date named will induce others to note from time to time its rate of growth. These measurements were made of record both at Sequoia and with the commanding officer at Wawona. When young it takes a conical form from the ground, tapering to a fine point. Subsequently Mr. John Crocker, with Mr. C. N. Adams, of Palo Alto, and Mrs. Clark, of Oakland, found about ten smaller trees in the same grove.

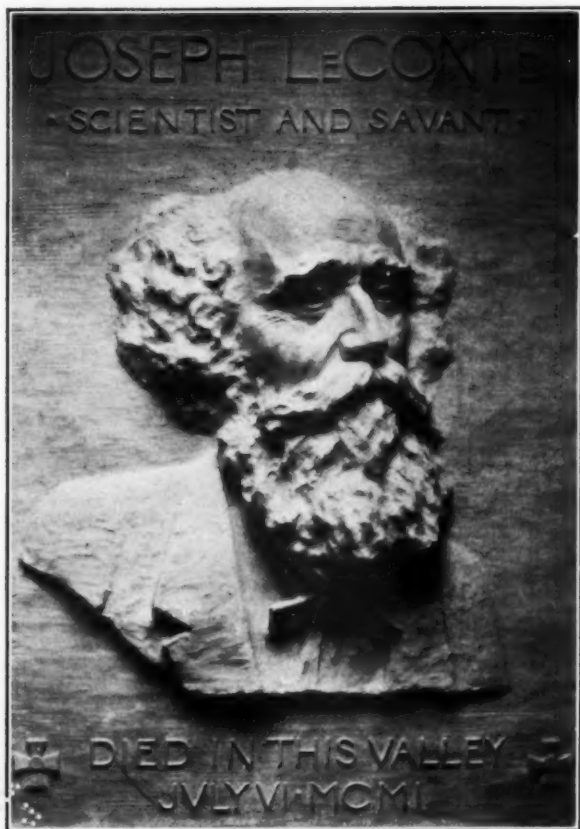
Observations here and in other parts of the Sierra showed vast thickets of young trees well sprinkled over with young sugar-pines. The sequoia and the sugar-pine when young are exceedingly tender and are killed by the slightest fire; other species are more resistant, and hence more abundant. The suppression of forest fires will restore these two splendid species to the Sierra, and with either clean cutting or by leaving young and seedling

or mother trees there will be no difficulty in preserving forever the forests of the Sierra. The Digger Indian system of forestry will not give timber as a crop; but it must give place to systematic forestry which will admit of either cutting close and reseedling with valuable timber such as sugar-pine or sequoia or both; or by cutting only mature trees, leaving growing timber and seedlings for future generations. The observations of the writer lead conclusively to the opinion that the recuperative powers of Sierra Nevada forests are so great that to preserve them only fire protection and cutting out superabundant young growth is necessary.

To aid in the extension of the best species two systems should be followed: First, inferior species should be cut out before seeding, and superior species should be allowed to seed and be planted; second, in regions near the upper limits of superior species they should be systematically extended and aided, as all species are naturally reaching out toward higher elevations. The situation is by no means as black as it has been painted, and only requires systematic and sustained protection and aid to maintain the Sierra Nevada forever as a source of wealth both of timber and water.

SAN FRANCISCO, October 30, 1905.





MEMORIAL TABLET FOR LE CONTE LODGE.

BY DOUGLAS TILDEN.

From photograph by T. D'Estrella.

IN MEMORIAM: JOSEPH LE CONTE.

BY WILLOUGHBY RODMAN.

This to his memory. 'Mid the scenes he loved  
We raise this tribute of our greatful hearts.  
For here he dreamed and pondered; here he found  
The highest inspiration of his life.  
Among these rocks with reverent soul he read  
The lesson of the immemorial past.  
Here, with his head pillowed on Nature's breast,  
His spirit passed into a perfect peace.

When civil strife laid waste his native land,  
He turned his footsteps to a newer life.  
Too sad the memories of a ruined home,  
And seeming death-throes of a well-loved State.  
Sad—not repining, weary—not cast down,  
He turned his strength unto the present task.  
It is our pride that here he found his home,  
That from our State, while he abode with us,  
He took full measure, honor, trust, and love;  
And left his impress on our life and thought.  
For if the sacred fire of learning burns  
Upon our altar, by his faithful hand  
Its feeble flame was cherished. If our lives  
Show forth a nobler influence, broader views,  
More earnest striving toward a pure ideal,  
We know his soul is living in our own.

As o'er Tissa-ack's\* mighty dome the sun,  
Not with slow dawning, as in other lands,  
But with a sudden splendor lights the vale,  
So unto him the glory of this scene  
Came as a revelation. From that day

\* *Tissa-ack*—Indian name of LeConte Dome, formerly known as Half Dome, or South Dome.

The great Sierra claimed him as her own.  
Here did he seek the knowledge that he loved.  
Not with the pedant's trick of line and rule,  
Nor the dry scholar's catalogue of facts,  
Came he unto his task. With lifted heart  
And poet's soul, he read time's history.  
He read the record of Almighty mind.  
He marked the progress of divine ideals  
From the first dream of life within the cell,  
Unto the perfect flower of human thought.  
He traced the soul from formless, thoughtless things  
Until it grew into consummate might;  
Until it lived in lives like unto his.  
Through all the varied, seeming-hopeless maze  
He saw one purpose working to its end.  
Striving for knowledge, still he looked beyond  
And read the deeper meaning of the world.  
He knew the soul of Nature. Reverently  
He drew the veil that guards her sacred shrine,  
And looked upon her inner mysteries;  
And their pure radiance shone upon his face.  
Unto his heart the woods and mountains spake;  
And if our hearts in harmony respond  
Unto the inspiring strains of Nature's music,  
We, too, shall hear the grand Sierra's song.

#### THE SONG OF THE SIERRA.

Ye who are wearied and worn, who have sunk 'neath the  
weight of your burdens,  
Ye whose shoulders are bowed by the yoke of humanity's  
service,  
Ye who have stood by the grave of your youth's divine  
aspirations,  
Ye who have lost the hopes which made all the future  
supernal,  
Ye who have lost the faith which pointed you upward  
and onward;

Ye whose hearts are seared with the iron of anguish and  
sorrow,  
Ye whom passions have scorched till the life of the spirit  
has perished,  
Ye who live, dead in your hearts—hear the song of the  
mighty Sierra—  
Come back with me, ye who wander; I will lead you  
again unto Nature.  
Come to that heart whence we sprang, to the infinite love  
of our mother.  
Far have ye wandered away from the paths which she  
showed at life's dawning;  
Seeking false gods have ye roamed, while her woodland  
shrines were deserted.  
The mist and the dust of the world dim your eyes to  
your olden ideals.  
Come back to the old glad life, to the hopes and the  
dreams of your childhood.  
Never again can ye know the joys of a vanished Arcadia;  
Nymph and fawn are dead, and the heights of Olympus  
are silent.  
Never again will the joys of a careless and thoughtless  
existence,  
A soulless rapture and thrill in the sensuous joy of  
living,  
Gladden your hearts as of old; for life has grown fuller  
and deeper;  
Higher the reach of your thought, broader the scope  
of your vision;  
Keener the pangs of the soul, but higher the flight of  
the spirit.  
Though no more ye may revel in careless delights of  
your childhood,—  
Purer joys shall you know if you turn again unto Nature.  
Still in her woodland temples the fires of her altars are  
burning;  
And there may your souls renew the faith and the hope  
of life's morning.

She biddeth you be at rest while she lulls you to sleep  
on her bosom  
With the murmuring music of streams, and the slumber  
songs of the breezes.  
She will bid you go forth to your task, it may be unto  
sorrow.  
She wills that you live your life, not lapse into  
dreaming.  
She wills you not always to kneel at her altar in rapt  
adoration;  
She wills that you show in your lives, in your labor, the  
joys of her worship.  
She will not give you surcease of the labor which comes  
as life's portion;  
But she giveth you peace and hope,—the peace of the  
vales and the forest,  
The stately calm of the summits, the hope that is born  
on the mountains.  
She giveth you will to know her inner, mystical  
meaning,  
To meet with eyes unshrinking the apocalypse of her  
splendor.  
Yielding your mood unto her, your souls are at one with  
Nature,  
Pure as the snows of the woodland, strong with the  
strength of the mountains.  
Then with joy will you go to join in life's strenuous  
conflict,  
Glad with a new-born hope, strong with a new inspira-  
tion.  
Though you may pass into strife, though your days may  
be clouded by sorrow,  
Dream in the darkness a dream, sing in your sorrow a  
song.  
Though the journey be weary and long, though your  
spirits fail in the battle,  
Still in your hearts shall you hear the song of the mighty  
Sierra.



Thus did the grand Sierra speak to him;  
And thrilling chords of that inspiring song  
Sound in the message which he gave the world.

But not in poet's dreams his force was spent;  
He lived the life of science. To his mind  
Life was one earnest, ceaseless quest for truth.  
He looked across our close horizon's rim  
And sought to pierce the infinite beyond.  
He followed truth unfaltering, pausing not  
If some great thought led him beyond the bounds  
Set for our feet by narrow faith or creed.  
Breaking the shackles by convention wrought,  
He lived the free, true life of intellect;  
One of the fearless few who dared to know.  
Since thought's first dawn a few unconquered souls,  
Braving the bigot's wrath, have stood for truth;  
And on the lonely watch-towers of the world  
Died, waiting for a day that never dawned.  
Forever in the vanguard of the right,  
Their onset broke the phalanx of the wrong.  
The rack and stake but mark the battle-fields  
Where error sought to check their bold advance.  
Martyrs and heretics, despised and scorned,  
Their death-fires light the beacons of the world.  
Not in their time their victory; now they stand  
Star-crowned above our level, on their brows  
The glorious dawning of a grander day.  
And he whose memory we consecrate  
Was one of these. With deep, far gaze  
He saw, through mists of error, God's own truth.

Unto his memory we dedicate  
The labor of our love. Long may it stand,  
Our humble tribute to a noble life.  
Unto our brotherhood this place shall be  
Forever sacred. Let us enter here  
With heart and mind solemn and reverent,  
Responsive to the spirit of the place.  
For this is the high temple of our creed;

The creed of those who seek to know the truth,  
Who seek it where its lessons are inscribed  
Upon the deathless pages of the rocks,  
Or told in thrilling whispers of the trees,  
Or sung by murmuring ripples of the stream,  
Or where in grander harmonies resounds  
The diapason of the cataract.

And let us hope, that, waiting by our shrine,  
His spirit shall lead us, bidding us be true,  
True to the love of Nature, true to truth.  
If to our hearts the love of Nature brings  
The revelation of her higher law,  
Her deeper meaning; if we honor those  
Who knelt at Nature's shrine, who lived for truth,  
This is the center of our dreams and hopes;—

Yea, this is holy ground  
Made holy by the thought that 'mid such scenes  
The noblest aspirations of the soul,  
In passionate longing for the beautiful,  
Rise to the Infinite, and by the thought  
Of him whose memory we here enshrine,  
The memory of one who sought the truth,  
Of one who loved the beautiful and good,  
Whose life was gentle, beautiful, and true.

In loving memory of his life and work,  
With reverence for the soul with which he wrought,—  
To noble uses, to the love of truth,  
To love of nature, to our brotherhood,  
We dedicate this temple in his name.  
His life was Nature's; at its close his soul  
Entered the rest she keepeth for her own.

Now to his wakened mind the gathered lore of the ages  
Seemeth a single page of the luminous volume of  
time,

Now to his lifted spirit the song of the mighty Sierra  
Blendeth with Nature's anthem in harmony thrill-  
ing, sublime.

That which we seek in our blindness, yearning with im-  
potent passion,  
Wandering guideless, alone, in the depth of an in-  
finite night,  
Is revealed to him illumed with the glorious splendor of  
noonday,—  
Finding his life's ideal, he cometh into the light.

Now are his dreams come true; all the tireless watching  
and striving  
Blend in a perfect peace, in the rest of a task well  
done;  
Long had he labored and waited, seeking one goal in the  
distance,  
Now he knoweth the truth; now is life's victory won.

## WILD ANIMALS OF THE MT. RAINIER NATIONAL PARK.\*

BY ALDEN SAMPSON.

The presence of wild animals greatly adds to the pleasure of those who visit the Mt. Rainier National Park. Fortunately, it is not yet too late to preserve this feature of interest; in the future it may be made a still greater source of delight. White goats (*mazamas*) are found in abundance high up among the ice and snow on rocky ridges, and during the heat of the day on the glaciers, where, after feeding, they seek asylum from their enemies. Here the breeze is always fresh and agreeable; by its aid they are rid of the pest of flies which at a lower altitude are an intense annoyance.

During the ascent of Mt. Rainier made by the Sierra Club we were so fortunate as to see about fifteen goats at some little distance across the ice, on the ridges above the Nisqually Glacier, and previous to this members of the party at various times had secured photographs of these interesting animals at close range. When stalked from above, it is not difficult to approach close enough to them for the purposes of photography, as they range high up on the mountain, and are but rarely disturbed by human visitors. Their presence contributes much to the interest of the upper reaches of the mountains, which except for them would be almost without animal life.

There are no elk on the flanks of Mt. Rainier. We were told of the presence of a few still to be found in the Tatoosh Range to the south, and on Goat Mountain, both close to the southern limits of the park. The question of a winter range for these animals, in case they were estab-

\* This article is part of the report of the Joint Committee on pages 44-50.

lished here, is one that would have to be carefully studied. No tract obviously suited to that purpose was noted by us. Should such exist, elk could be brought from the Olympic Forest Reserve to form the nucleus of a herd here. There are now in the Olympics 2,500 or 3,000 elk of the *Cervus occidentalis*, or *Roosevelti*, almost the sole survivors of the vast bands which once ranged on the Pacific Coast. Were an attempt made to bring to Mt. Rainier individuals of the Olympic herd, it would probably be necessary, in order to accomplish their transfer without injury and to retain control of them afterwards, to hold them first segregated for several months under constant supervision and care, and thus partially domesticate them, before attempting to accomplish such removal to their new home. It is not, however, believed that the conditions are favorable for their presence here.

Mountain sheep, while they range on the east side of the Cascades, are not found in the park, and there is no sign of their formerly having been there; probably the winter range is not such as they would accept. These creatures do not dislike a wooded range such as may be found in an open forest where grass abounds, as so often is the case in the Rocky Mountains and southern Sierra; but it is to be noted as a characteristic of large tracts of the Washington woods, and particularly of those around Mt. Rainier, that grass is rarely found except immediately below the glaciers and in the valleys in that vicinity. While the ground in the forest is covered with a solid mass of verdure, a tantalizing sight to the hungry horses of the traveler there, unfortunately for them it mainly consists of a feathery moss, or of the scanty "browse" of bushes, or of slight herbage not acceptable to the palates of horses, elk, or mountain sheep.

Deer are found in considerable abundance, and are still killed to some extent, regardless of law. The writer saw on one excursion a string of a dozen or fifteen dead-falls which had been baited with deer-meat and set for marten two winters previously. In one of these traps

was a doe's skull, which told its story. As the number of competent rangers is increased, the practice of killing deer for meat will be discountenanced, and a sentiment created which, as in the vicinity of the Yellowstone National Park, will prove the real safeguard of the wild animals. Numbers of deer were seen by our party. The conditions are favorable for their increase.

Only a few bears survive of the many that were once found in this region. In Spray Park, to the north of the peak, one of the black variety with two cubs was observed. Cinnamon bears are occasionally seen, but the grizzly bear is now extinct in this whole region. Berries of many sorts abound, and various roots and herbs are found on which bears can subsist at all seasons of the year when not in hibernation. This food is scattered enough to give the beasts all the exercise they need to maintain health. These animals are perfectly harmless so far as man is concerned, and a sight of them in their wild state is of no slight interest. The few remaining specimens should not be disturbed. The three seen on our excursion were gathering huckleberries on a hillside, and were under observation for perhaps an hour, the mother eagerly satisfying her hunger, and the young making repeated excursions of exploration, from which each time they returned in a panic of apprehension, until they had convinced themselves by actual touch that their friend and sheltering providence was still there. A more engaging spectacle of diligence and of content tempered with vigilance it would not be easy to find.

The wolverine, carcajou, great American sloth, or skunk-bear, as from his shaggy back and tail he is sometimes discriminatingly called,\* a beast equally rare and equally hateful, is occasionally seen within the bounds of the park. Probably for many years to come this animal will continue at remote intervals to enter within the precincts of the park.

\* It is to be noted that when the "Wolverine State" was so called, the designation was bestowed by the inhabitants of a neighboring State, and was not given in affection.

There are a considerable number of cougar, more generally called mountain lions, once universally known as panthers, and these, so far as the interests of man are involved, are perhaps somewhat of an evil. They doubtless kill young deer, particularly in the winter, when the latter are at their mercy. If elk were established here, or in this vicinity, care should be taken that the number of the cougar be not allowed indefinitely to increase. In the Olympics they are a source of annoyance.

In regard to the timber-wolves nearly the same might be said. Individually, they are of interest to man, as creatures of great power, courage, and sagacity, and for this reason one would naturally be reluctant to see them exterminated. The view of a fine timber-wolf seen one morning through a rift in the fog, on the slope of a mountain ridge, in the Olympic Reserve in 1903, was the source of great satisfaction, and one of the most agreeable recollections to the fortunate beholder.

There are a considerable number of coyotes, and their call at night, as thrilling and exhilarating a sound when heard in the forest as ever greets the ear of the mountaineer, is always a keen satisfaction to one who loves the wild life. The musical chorus of the coyotes at night-fall and the scream of the loon are two sounds of unsubdued nature to be stored away in memory among one's choicest recollections, like the booming of a frozen lake at night, or the "swish" and crackle of the northern lights in a winter sky.

It is unwise to exterminate the last representatives of any tribe. So long as rabbits abound the woods will be wide enough for representatives of all the animal kingdom in our part of the world, even if eaters of meat like ourselves. The methods of nature may be trusted to a very considerable extent to maintain an equilibrium. The less man attempts to regulate the whole created universe, the greater in the end will be the sum total of happiness for him and for all concerned.

Of other fur-bearing animals, a few beaver still sur-

vive, but their presence and haunts are known to hunters, and it is doubtful if they will much longer continue to wear their coveted hides. Where they are found, their houses and dams are always of great interest to the intelligent traveler, but this has practically long ceased to be the case in the Mt. Rainier National Park.

Fisher, marten, and otter, and several varieties of weasel are occasionally found, also the civet-cat and the lynx. Only a rare glimpse will ever be had of these creatures in their wild state, but such a view is to be prized in exact proportion to its infrequency. Two varieties of skunk are found at a lower altitude, but perhaps these do not penetrate into the park proper. Their presence may well be spared here. A gray fox is found on the mountain, and several varieties of mice, which doubtless are of interest to him. A chipmunk lives here, the Douglas squirrel, the ground-squirrel, and wood-rat,—this last the hero of many a story of misappropriation and of strained relations between the occupants of cabins in forest or prairie. Rabbits are found, and the very interesting pika, or cony, who lives among the broken rocks at an altitude corresponding to the lower glacier belt and somewhat higher still; his cry as he sits at the entrance of his hole is always agreeable to the ear, and the glimpse that one gets of him as he scurries to cover is a pleasant little picture to recall.\* He and the whistling marmot are generally found sharing the same sort of conditions, and this has resulted in a sort of similarity of habit. This little hare is of especial interest as having a call not unlike the bleating of a lamb, a curious and distinguishing circumstance for a representative of this silent clan. His designation as the "little chief hare" is a well-inspired appellation. Although the smallest of his tribe, he seems to have an individuality and

\*It is strange that there is a passage in the Bible referring to a totally different animal (the Hebrew *shaphan*) which, as translated, exactly and literally applies to this one: "There be four things which are little upon the earth, but they are exceeding wise. . . . The conies are but a feeble folk, yet make they their houses in the rocks"—*Proverbs xxx. 24-26*.



sort of fearlessness quite his own. He differs from the generality of the rabbit tribe not only in uttering a frequent call, which seems but to emphasize the silence of the hills, but in the fact that he gathers his food and eats it at the entrance of his den, whether it be sprigs of succulent herbs, or flowers agreeable to his palate, or clusters of berries. He resembles in this respect the two characteristic mountain denizens next to be mentioned, the whistling marmot and the haplodon. The former of these closely resembles the Eastern woodchuck, except that he is more powerful and has a well-known cry, which he is fond of uttering, a very sharp and piercing whistle. In the upper grassy valleys about Mt. Rainier great numbers of these creatures abound, and where they have not been shot at are often seen. The remote valleys and barren ridges around the peak would be deprived of one great charm were the alert and shrill challenge of their guardians no longer to be heard. They are fond of taking their station on the most prominent rock of a slide, or on a projecting boulder along a ridge where the whole hillside or valley may be commanded, and on this lookout rock the greater portion of their time during the day is spent, basking in the sun when that shines, and ever maintaining a shrewd observation of all that goes on around them. In many cases the surface of their lookout rock has become quite polished from its use by many succeeding generations of watchers. St. Simeon Stylites was hardly more constant. Unfortunately for their peace of mind, the discovery has been made that marmot stew is good to eat. As the park is more scrupulously guarded these animals will be protected, and it is to be hoped will long remain a source of pleasure to the traveler.

One sees the burrows of the haplodon, or sewellel, all around the mountain, particularly in the vicinity of the meadows near the sources of the glacier rivers. These little beasts are about the size of a muskrat, and are most entertaining in the slight and indirect glimpses which

they afford us of their personality; glimpses of their personality but not of their persons. Unfortunately, they are excessively shy, the most so of any animal in America, and although one sees day after day, both here and in the Olympics and Cascades and in similar country over a wide range, their innumerable burrows, and the little supply of fresh herbage at the entrance to their homes, yet is the casual spectator never vouchsafed a sight of these elusive creatures. Their soft fur, and it may be their extreme industry in the excavation of subterranean runways, has given them the name of "mountain beavers." It is a mooted point whether they make a winter cache of provisions; arguments on both sides are adduced. One repeatedly sees at their burrows food in various stages of dessication, perhaps the refuse of their daily supply. The study of their habits by intelligent observers is strongly to be commended.

Among the birds, the ptarmigan is especially worthy of mention. These are in various places quite abundant and tame. A member of the party secured at the minimum range of his camera, which is seven feet, three photographs of a little group of these interesting birds, and their closer protection is greatly to be desired. Ptarmigan are so easy to kill that notices should be put up where they abound, cautioning tourists against molesting them and enlisting the co-operation of all to this end.

In this brief review of the animals of the park, which makes no claim to scientific exhaustiveness, sufficient has, perhaps, been said to suggest how great an element of interest the wild creatures contribute. The portion of the community which is interested in the study of them is a constantly increasing one, and every year more and more people will share in the satisfaction derived from an intimacy with nature, and from somewhat of familiarity with the occupants of the woods and with the wild dwellers on the mountain-side. As a matter of course, citizens of our commonwealth will look to see that taste gratified in a national park.

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THE SIERRAN PUFFBALL.

From photograph by the Author.

## THE SIERRAN PUFFBALL.

BY WILLIAM ALBERT SETCHELL.

When the members of the Sierra Club scatter themselves among the high mountains for the purposes of relaxation and promoting our knowledge of these snowy peaks and ranges, will some of them pause a moment on their various and devious ways to make a note on meeting one of the humbler and less well-known aborigines, yet one which is a noble of high rank in its own class? The aborigine I have in mind is the Sierran Puffball, which, while not by any means the largest of all known puffballs, yet is of fair size, and by its elaborate markings one of the most decorative. No other puffball known has so striking and so elaborate a set of sculpturings on its outer coat.

The Sierran Puffball was first made known to the botanical public in 1885 by Dr. H. W. Harkness, and named by him *Lycoperdon sculptum*. Dr. Harkness told me that the original specimen came from the eastern slope of the Sierra, but he seemed uncertain of the exact locality. In all probability, it came from some locality not far from the region of Lake Tahoe. It is quite certain that it has never been seen except in fairly high altitudes of the Sierra, and, consequently, it seems entitled to the English name which I have placed at the head of these notes on it.

The Sierran Puffball is an easily recognized species. It is six to eight inches long, four to five inches high, and four to six inches broad. Its general shape is that of a broad, flattened pear, for below the swollen upper portion above the ground it has a thick but short stalklike base which is situated below the surface of the ground on which it grows. When entire, the upper rounded portion

is marked on the surface by broad pyramidal projections, which are often an inch in diameter at the base and half to three quarters of an inch high in the larger mature specimens. The projections are regularly arranged and give the dorsal side of the puffball the appearance of the back of a tortoise. It is this peculiarity, connected with the large size, which makes this puffball so readily recognized. No one can possibly make a mistake in regard to its identity. All other large puffballs are either absolutely smooth on the upper surface or else marked with minute projections. The projections, then, on the surface of the Sierran Puffball are gigantic, especially when young. Later they often split into three or four, remaining attached by their tips, which also often become curved.

At maturity, the whole puffball becomes dry, the interior being filled with a bright yellow, powdery mass of spores and microscopic threads, while the thick outer covering breaks up into pieces and falls off. In this way the spores are exposed to the winds, which scatter them, and thus spread the growths of puffballs. Finally all the upper portion disappears, and nothing is left but the stout stalk, more or less buried in the ground, and some fragments of the upper portion and some traces of the powdery spores. Two of these latter stages are represented, about one quarter the natural size, in the photograph accompanying these notes.

Like all other puffballs, and in fact like all other fleshy fungi, this one is seldom entirely free from insects, which find shelter and food within its tissues, thus spoiling the plants for good botanical specimens, and even hindering the proper maturing of the spores. Small specimens are often found which from this or some similar cause have been killed early in their development, and, while not showing the effects of the ravages externally, have become mummified, or dried up. Such specimens show the general characteristics well, but do not show the important spore characters. Two such specimens are represented in the lower right-hand corner of the photo-

graph. They show the sculpturing of the surface very well.

Owing to the scarcity of the Sierran Puffball, I do not suppose that any one has had the opportunity to try its flavor when cooked. The specimens I found were mature, and so dry and dusty that eating was out of the question; but should any be found in the stages when the interior is solid and white, it would be well to try it, sparingly at first, either cut into slices, salted, and fried, or stewed with beef broth, for the flesh of the large puffballs is delicious in its flavor, and none of them are known to be poisonous. Our large species of the neighborhood of San Francisco are much appreciated by the epicures.

Very little is known as yet of the extent of the Sierran country inhabited by this puffball, and it is desirable that much more information should be obtained. Dr. Harkness, as indicated above, does not give any information as to the exact locality whence he received his specimens, but contents himself with saying that the species "is found only at considerable elevations, 6,000 to 8,000 feet, in the Sierra Nevadas." Of the several specimens preserved in his collections at the California Academy of Sciences in San Francisco, only one has the locality marked. That one came from Summit, in Placer County, whence a specimen, collected by Mrs. Charles H. Shinn, is among the plants of the herbarium of the University of California. We have also in this herbarium specimens gathered at Sierra Valley and between that place and Truckee, collected by Mr. Fowler. W. C. Blasdale has collected the Sierran puffball in the neighborhood of Lake Tahoe, and I have specimens taken by myself from a considerable number of fine large plants seen in the neighborhood of Emerald Bay on Lake Tahoe. The photograph represents some of these specimens. From farther south, we have a specimen collected at Tamarack Flat, on the Big Oak Flat road into the Yosemite Valley, by H. N. Bagley; and the late Professor J. J. B. Argenti described to

me puffballs seen by him at Crane Flat which certainly must have belonged to this species.

As will be seen, the sum of all our knowledge is small, and it is hoped that much more information may be obtained of its occurrence in the Sierras, both north and south, both as to higher and lower altitudes. The plant is so readily recognized that there is little danger of mistake, but if localities can be reported, accompanied by small specimens, or even by one or two pieces of the upper crust with the pyramidal elevations which are so characteristic, all doubts will be removed. It is for the purpose of enlisting the interest and sympathies of the members of the Sierra Club in the attempt to gain this more extensive and exhaustive knowledge that these notes have been written.



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*The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."*

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## REPORTS.

REPORT OF THE JOINT COMMITTEE OF THE MAZAMA  
CLUB AND THE SIERRA CLUB ON THE MT.  
RAINIER NATIONAL PARK.

*To the President of the United States, and  
The Secretary of the Interior:*

At a meeting held during the Joint Outing of The Mazama Club and The Sierra Club in July, 1905, in Paradise Park, of the Mt. Rainier National Park, at which meeting were present also representatives of the American Alpine Club, and the Appalachian Mountain Club, a resolution was unanimously adopted to appoint a committee representing those present from the membership of these organizations, to report to the President of the United States, and to the Secretary of the Interior, on the present condition of this National Park, and to recommend such action for its betterment as might appear desirable.

The following committee was appointed: Chas. E. Fay, of American Alpine Club; W. A. Brooks, of Appalachian Mountain Club; E. P. Sheldon, of Mazama Club; E. T. Parsons, Chairman, of Sierra Club.

To this committee was added Alden Sampson, recently Game Preserve Expert of the United States Biological Survey, who was present during the encampment, and who made an investigating tour and complete circuit about the mountain.

These committee-men have prepared the following report, and herewith beg leave to submit it to your consideration as a disinterested expression of the views and recommendations of nature-lovers and mountaineers.

Very respectfully,

CHAS. E. FAY,  
W. A. BROOKS,  
E. P. SHELDON,  
ALDEN SAMPSON,  
E. T. PARSONS, *Chairman.*

ATTRACTIVENESS OF MT. RAINIER NATIONAL PARK TO THE  
AVERAGE CITIZEN.

It was a wise provision that set aside the Mt. Rainier National Park as a perpetual reservation for the enjoyment and benefit of the citizens of our common country, and every care

should be taken to preserve it in its native attractiveness for the generations to come. Such was the unanimous opinion of the large and distinguished body of men and women, representing in their number no less than twenty-two American colleges and universities, in conformity with whose will the Committee making the present report owes its existence.

Though the observations of the majority of the members of the Committee were confined to the southerly portion of the reserve and principally to the district known as Paradise Park, it is felt that, in general, what is true here applies with equal force to all sections of the great reservation.

Because of its comparative accessibility to the large cities of Oregon and Washington, Mt. Rainier National Park, and Paradise Park in particular, is destined to become in future years a pleasure-ground for thousands of people, as the Adirondacks and the White Mountains are for the inhabitants of Eastern States.

Situated just below the snow-line on Mt. Rainier, the grandeur and beauty of the region are unsurpassed. The lower slopes are covered with grand forests, which give way at higher altitudes to the open park country where the valleys and hillsides are carpeted with green sward spangled with myriads of wild flowers, and ornamented with clumps and groves of sub-alpine firs and spruces, the hardy mountaineers of the botanical world. The vegetation extends up the mountain to nearly six thousand feet, above which is the zone of snow and ice whose eternal whiteness makes Rainier a landmark for the traveler and a beacon for the sailor while they are yet scores of miles away.

Rising west of the Cascade Divide and within sight of the Pacific Ocean, where the landward breezes distribute an enormous snow- and rainfall during six months of the year, Mt. Rainier has a great glacier system outranking in this respect as it does in height any mountain in North America outside of Alaska. Its area of glaciers and perpetual snow cover 32,500 acres, and it rises in magnificent outlines to a height of 14,528 feet above sea-level. Within the limits of Paradise Park one of the largest glaciers, the Nisqually, presses down below timber-line in the park, discharging into the river of the same name. Two others, the Paradise and the Cowlitz, are also within walking distance.

On the opposite side of the valley from Mt. Rainier, across the Paradise River, rise the sharp, rugged peaks of the Tatoosh Range, beyond whose serrated sky-line from high points within the park may be seen Adams, St. Helens, Hood, and other snow peaks.

To the scientist, whether he be botanist, geologist, or zoologist; to the artist in search of grand subjects for his canvas; to the camper who loves to pitch his tent where he may listen to the music of falling water and fill his lungs with the pure breath of the hills; to the mountain-climber seeking heights worthy of his ambition; or to the tired business man whose weary brain demands rest away from the busy routine of mercantile life, Paradise Park is happily named. The diversity of the landscape, the solemnity of the silent forests, the prodigality and wonderful coloring of the floral display, the foaming water of the streams that rush down the valleys and plunge over the cliffs in many picturesque falls, with the mighty white dome of Rainier towering majestically over all and clasping with the icy fingers of its glaciers the green slopes below, all combine to make this mountain park a region of irresistible charm.

#### COMPARISON OF MT. RAINIER NATIONAL PARK WITH OTHER GREAT SCENIC REGIONS.

This appreciation is not confined to persons of our own nationality or race. Foreign world-travelers, lovers of the grandly picturesque, unite in highest admiration of the Rainier region.

Hon. James Bryce, the well-known publicist and a member of the English Alpine Club, and Professor Karl Zittel, of Munich, a geologist familiar with all the aspects of Europe, several years ago, in a joint letter suggesting in advance of National action that the Mt. Rainier region should be reserved as a national park, wrote as follows:—

"The scenery of Mount Rainier is of rare and varied beauty. The peak itself is as noble a mountain as we have ever seen in its lines and structure. The glaciers which descend from its snow-fields present all the characteristic features of those in the Alps, and though less extensive than the ice-streams of the Mont Blanc or Monte Rosa groups, are in their crevasses and seracs equally striking and equally worthy of close study. We have seen nothing more beautiful in Switzerland or Tyrol, in Norway or in the Pyrenees than the Carbon River glacier and the great Puyallup glaciers; indeed, the ice in the latter is unusually pure and the crevasses unusually fine. The combination of ice scenery with woodland scenery of the grandest type is to be found nowhere in the Old World, unless it be in the Himalayas, and, so far as we know, nowhere else on the American Continent. . . ."

#### DESTRUCTION OF FOREST GROWTH, WITH RECOMMENDATION FOR INVESTIGATION.

Our Committee has few recommendations to present as to means to be taken to conserve the existing natural features. As an example of what might be done to prevent a deterioration in

the sylvan beauty of the park the following seems worthy of mention:—

The growth of the sub-alpine fir (*Abies lasiocarpa*) and alpine hemlock (*Tsuga Mertensiana*) around Mt. Rainier, which forms the extreme limit of tree-growth, is dying rapidly. Besides being objects of beauty these trees have a second very practical value as a means of conserving the water supply by retarding the melting snow in the spring and summer months.

So far as a cursory observation would permit, it is evident that the cause of the death of these trees is not fire, but is either a fungus or an insect disease, or both. It is therefore recommended that the United States Department of Agriculture send an expert to the park to determine definitely the cause of the death of this valuable timber, and take measures to prevent future damage, if possible.

#### ROADS AND TRAILS.

Too much emphasis cannot be placed on the importance of the means of access to the various regions of this great park with their varied features of interest, and in particular on the desirability of a carefully considered system of roads and trails connecting these regions with each other.

It is earnestly advocated that the Government road, so finely planned and located, from the mineral springs of the Nisqually (locally called "Longmire's Springs") to the upper reaches of Paradise Park, be completed at the very earliest possible date. By it visitors could reach the park in their own conveyances without the expense, inconvenience, and annoyance of packing their outfits and supplies, which now deters many from enjoying this magnificent region.

Paradise Park on the southerly slope of the great mountain is at present the one readily accessible region of this great reservation, and there are only two passable trails by which to reach it. The "old trail" from the unfinished Government road up the north side of the Nisqually River is in good condition, and passes up a beautiful scenic cañon through wooded flats beside the tossing river until the terminal face of the Nisqually Glacier is reached. From this point pedestrians can ascend the steep sides of the cañon to the park proper. This trail well serves the public as it is, and will do so until the fine Government road replaces it. In addition to this "old trail" is the one used at present chiefly to reach Paradise Park, which leaves the Government road near the end of the partly completed four-mile stretch, and, crossing the Nisqually once and the Paradise River twice, enters the park near Camp of the Clouds.

In 1897 there used to be a good trail branching off from this trail just before the second crossing of the Paradise River, above Narada Falls, and leading up the side and along the crest of Mazama Ridge, one of the most striking scenic view-points in the park, to a point just above Sluiskin Falls. This trail, ending at a fine camping-spot on high ground near four or five small lakes, has been allowed to get into bad condition. It should be put in good repair, and this could be done with very little labor.

A trail should early be constructed to Indian Henry's hunting-grounds from the north side of the Nisqually Glacier in Paradise Park. This at first might be for pedestrians only, later to be perfected for saddle- and pack-horses.

The two trails suggested—that from Paradise River to the head of Mazama Ridge near Sluiskin Falls, and the one from the Nisqually Glacier to Indian Henry's hunting-grounds—might be the first of a system to circuit the mountain, and when constructed would render accessible the finest portions of the Mt. Rainier National Park adjacent to the approach by way of Ashford and the valley of the Nisqually River.

As bearing on the development of a system of roads and trails making the entire circuit of Mt. Rainier, we incorporate with our report the following testimony of a member of our Committee well versed in woodcraft and most competent to speak upon this subject. Mr. Alden Sampson writes as follows:—

"With another member of our party this summer I made the circuit of the peak. We traveled with pack-animals and made our journey in a leisurely way, stopping as the view tempted us, or where feed, not a too frequent circumstance, was to be found. We left Longmire's Springs after the departure of the Sierra Club from that encampment, and went by the way of Bear Prairie down the Skate Creek Trail, being obliged in one afternoon to ford that stream, a rocky and at times (for horses) somewhat disagreeable river-bed, no less than thirty-eight times. At present the alleged trail is but a poor affair, shifting about from bank to bank of the stream wherever foothold offers; in one section, on a steep hillside, it can hardly be called a trail at all, being quite impassable for laden pack-animals coming from the Cowlitz River. A trail laid out intelligently here in conformity with the broad characteristics of the valley is much to be desired.

"Following up the Cowlitz River we forded at the mouth of Muddy Fork, followed up the Carlton Trail to Fish Lake at the summit, thence along the crest of the Cascades by the old Klikitat Trail, which commands superb views of Mt. Rainier from the east, the finest of all views to be obtained of that mountain. From the mining settlement of Gold Hill we continued our course through Bear Gap, down Silver Creek to the East Fork of White River, and up that to Glacier Basin, thence around the lower end of the Winthrop Glacier, and around the Carbon Glacier. Looking up from the trail across the moraine here, we could see the edge of Spray Park above us, only two or three miles distant, yet

to reach it we were destined to travel nearly, if not quite, forty miles, descending the Carbon River to Fairfax, and thence ascending the Mowich River Trail to the lake below the park, where we left our horses. Going through Kapousen on our return, we completed the circuit of the peak, an excursion which had afforded many and assorted experiences of discomfort soon to be forgotten and of delight to be long treasured."

It is obvious that this strikingly fine excursion should be rendered feasible for all who would enjoy the park in a large way.

At present there are no trails by which the twelve or twenty glaciers, according as great or lesser bodies of ice are enumerated, may be visited in succession. In order to reach them long roundabout journeys have to be taken through the woods, where there is no feed for horses, and forced marches are often required to arrive at places suitable for the stock at night, and in some instances grain must be carried for their sustenance, since in the woods there is too often nothing whatever for horses to eat. Trails should be opened from one glacier to another, and permits granted to the proper persons to provide houses of entertainment at suitable places for travelers. At present accommodation of this sort is offered at Reese's Camp in Paradise Park only.

The glaciers are of commanding interest, and are destined within a few years to be visited by great numbers of people from all over the country. Trails opening these to view could easily be constructed at a tithe of the cost of the Government road from Longmire's Springs to Paradise Park. Trails of this nature would give views of mountain scenery unique in this country to such as are not afraid of an excursion in the saddle, and would be a boon to travelers greatly to be desired.

In laying out such trails advantage would naturally be taken of the meadows which are found in many places near the foot of the glaciers, so that proper feed would be afforded to stock. By the creation of these trails the great opportunity for the enjoyment of scenery on this grandest of American mountains would be for the first time placed within the reach of all.

#### PRIVATE HOLDINGS IN THE PARK.

There are few private holdings in the park—but one to the knowledge of the Committee. This one, however, contains the fine mineral springs near the Nisqually River. This holding or claim should be extinguished at the earliest possible date by purchase or condemnation proceedings and a good hotel erected here, either by the Government or by such lessee as would provide adequate and suitable accommodations for the public. This claim and its crude betterments, if bought at a fair compensation, would cost but little, and thus could the way be opened for proper treat-



ment of this gateway to the finest scenic regions of this grand National Park.

#### WILD ANIMALS IN THE PARK.

[This article is of such general interest that it has been given a place amongst the principal articles of this number.]

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#### REPORT OF OUTING COMMITTEE.

The Outing of 1905 to Paradise Park and Mt. Rainier in the State of Washington was one of the most memorable outings ever undertaken by the Club. The Sierra Club party numbered approximately one hundred persons, of whom twenty-five were guests from the Appalachian Mountain Club of Boston and the remaining seventy-five members of the Sierra Club. The Mazama Club also had a party of some seventy-five or eighty persons in the park at the same time. This meeting of so many representatives of the four mountaineering clubs of America (for many of the members of the three clubs above named were also members of the American Alpine Club) was a noteworthy event which will probably not occur again for many years.

The Sierra Club party visited the Lewis and Clark Exposition in Portland prior to the main trip and were royally entertained by the Mazama Club. A trip to Mt. Hood, which was climbed by about sixty members of the party, and an all-day excursion on the Columbia River were pleasant diversions during their stay in Portland.

Paradise Park proved to be a wonderful camping-ground, with its alpine meadow-land abloom with myriads of flowers, guarded by sentinel fir and spiny hemlock, enlivened by stream and waterfall, and embraced in the giant arms of the grinding glaciers which extend down on each side of the Park from the towering ermine-robed mass of Mt. Rainier.

Warned by the fatalities of the past that had occurred on this mountain, its climb was undertaken by the Sierra Club party of sixty persons (one fourth of whom were women) with every precaution to guard against accident. The climb to the summit from Camp Muir certainly established a record for so large a party, which arrived on top about 9:30 A. M., having ascended almost 5,000 feet in altitude in five hours. Though the climb for a portion of the distance was made over very steep and dangerous ice-slopes, necessitating the cutting of steps, yet no accident of even a trivial nature occurred. Several hours were spent on the rim of the crater, and the descent to the main camp was made in time for a 6:30 dinner. Mr. Parsons, of our com-



mittee, had previously made the ascent, and it was largely due to his able guidance and generalship that the outcome of the club ascent was so happy. The provision of two Khotal stoves at Camp Muir, which enabled the party to have hot food, tea, and soup for supper and breakfast there, doubtless added to the ease with which the trip was made. Forty members of the Mazama party made the ascent on the day following without accident, so that 1905 will probably long remain a record year for Rainier as far as numbers are concerned.

An excursion on Puget Sound was made on the return to California. About thirty enthusiastic members stopped over at Sissons and climbed Mt. Shasta, most of them having already climbed Hood and Rainier—certainly a record of which they may justly be proud, to have conquered the three principal snow-capped peaks on the coast in one season.

Though this Outing took place so far from the Club's headquarters, and the cost of transporting the equipment and the expenses of the cooks and assistants for so long a trip amounted to several hundred dollars more than the Club had paid on past Outings, yet it was a financial success, and a sufficient balance remains in the treasury with which to meet the preliminary expense of preparing for the 1906 Outing.

This Outing will be made to King's River Cañon with side trips to Bullfrog Lake and Tehipite Valley. In a year or two a wagon-road will have been constructed into the cañon, and it is to give our members another opportunity of visiting this wonderful region in its unaltered condition that this trip has been planned. It is encouraging to note that there are more applications for this Outing on file than ever before at this time. The Outing announcement accompanies this BULLETIN.

WM. E. COLBY, *Chairman,*

J. N. LE CONTE,

E. T. PARSONS,

*Outing Committee.*

## NOTES AND CORRESPONDENCE.

*In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.*

*The office of the Sierra Club is at Room 316, Third Floor, Mills Building, San Francisco, where all the maps, photographs, and other records of the Club are kept, and where members are welcome at any time.*

*The Club would like to purchase additional copies of those numbers of the SIERRA CLUB BULLETIN which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.*

SAN FRANCISCO, July 15, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

Sir: We have the honor to inform you, in accordance with instructions from the Grand Parlor, Native Daughters of the Golden West, held in San Jose, California, from June 12th to the 17th inclusive, that the inclosed resolutions, conferring on a peak in the Yosemite National Park the name "Mt. Junipero Serra," were adopted by the Grand Parlor.

We most earnestly desire your approval and co-operation in this effort to perpetuate the memory of the founder of the missions.

Very respectfully yours,

(Mrs.) LILLY O. REICHLING DYER,

(Mrs.) CORA B. SIFFORD,

(Miss) HARRIETT S. LEE,

Committee.

WHEREAS, The life work and extraordinary achievements of Father Junipero Serra, in the exploration of the unknown territory which afterwards became the State of California, are worthy of the admiration and praise of all who love this State; and

WHEREAS, It is but simple justice to acknowledge the debt of posterity to a great, good, and unselfish man, and to perpetuate his memory by some enduring memorial; and

WHEREAS, There is such a memorial ready and undedicated to the fame and glory of any one in an unnamed peak (as stated by City Engineer Grunsky in the reports of the Board of Public Works of the City and County of San Francisco, for the fiscal years 1901-1902 and 1902-1903, p. 210), located in the watershed

of Lake Eleanor at the head-waters of the Tuolumne River, and described as being 10,510 feet in height; therefore be it

*Resolved* by the Grand Parlor of the N. D. G. W., assembled this fifteenth day of June, 1905, in San Jose, California, That the aforementioned mountain be named Mt. Junipero Serra; and be it further

*Resolved*, That copies of these resolutions be sent to the Governor of the State of California, the President of the United States, the United States Geological Survey, the National Geographic Society, the Geographical Society of the Pacific, the Geographical Society of California, the Sierra Club, the California Club, the press, and to any other persons and societies that the Grand President may direct; and that the Government, the press, and the public are hereby requested to accept the name hereby given and to assist in making its use accepted and general to the end that the pioneer of pioneers may be duly honored in the land for which he worked and in which he died.

LILLY O. REICHLING DYER.

SAN FRANCISCO, Oct. 27, 1905.

Mrs. LILLY O. REICHLING-DYER, 2708 Hyde St., San Francisco.

*Dear Madam:* Replying to your favor of July 15th, inclosing certain resolutions adopted by the Grand Parlor of the Native Daughters of the Golden West, I will state that the matter contained in those resolutions was referred by the Board of Directors of the Sierra Club to Professor George Davidson as a committee of one to report upon the matter.

I herewith inclose the report of Professor Davidson, which is sent you by way of suggestion, and I wish to assure you that the Sierra Club will be only too glad to co-operate with you in any matter which pertains to the preservation of the scenery and other natural features of our Pacific Coast.

Very respectfully yours, WILLIAM E. COLBY,  
*Secretary of Sierra Club.*

2221 WASHINGTON STREET,

SAN FRANCISCO, CAL., Oct. 5, 1905.

TO THE BOARD OF DIRECTORS SIERRA CLUB, SAN FRANCISCO.

*Gentlemen:* On the 23rd September, at a meeting of the Directors of the Sierra Club, the undersigned was appointed a committee to frame an answer to an undated circular from the Grand Parlor of N. D. G. W., stating that on the 15th of June, 1905, an unnamed mountain in the Sierra Nevada, "located in the "watershed of Lake Eleanor at the head-waters of the Tuolumne "River, and described as being 10,510" feet elevation, was given the name of *Junipero Serra* to commemorate the life services of

that missionary; and asking the Sierra Club to indorse their proceedings.

I beg to report very briefly to the Club that the first missionaries who came to this coast were Fathers Juan Crespi and Francisco Gomez. These fathers came with Governor Portolá's expedition of 1769, to the port of Monterey, and were with the party when it discovered the Bay of San Francisco.

In the Portolá expedition of 1770 Father Juan Crespi came with the party by land; and the President Father Junípero Serra by sea, on account of his physical infirmities.

These fathers assisted Governor Portolá in founding the Mission of San Carlos at Monterey, which was soon removed to the northeast shore of Carmel Bay, for sufficient reasons.

Father Crespi continued his labors in California. President Father Serra spent his life in founding other missions on the coast hence to Lower California. He was familiar with the mountain ranges of Santa Lucia and Santa Ynes; and it is believed that he never saw the Sierra Nevada.

It therefore seems to me that some one of the unnamed peaks of the Sierra Santa Lucia stretching far southward from Carmel Bay would more appropriately bear the name of Father Serra. In that remarkable range, overhanging the Pacific for fifty miles, there are several unnamed peaks of 3,700 to 4,000 feet elevation. They are the landfalls of our navigators, and they were familiar to the early fathers.

The name of Junípero Serra in the Sierra Nevada will be simply a geographical record; his name upon one of these coast peaks that barred the expeditions of 1769 and 1770 will be a living designation to some marked and well-known landfall appealed to every day by the mariner and traveler.

Along the Sierra Santa Lucia, within a range of sixteen minutes of latitude, and less than three miles from the ocean, I note the following peaks unnamed on the latest charts of the United States Coast and Geodetic Survey:

	Latitude.	Height.
1 .....	36° 11'	4,032 feet
2 .....	36° 09½'	3,900 feet
3 .....	36° 08'	4,019 feet
4 .....	35° 55'	4,014 feet

This unique relation suggests that four names of the expeditions of 1769 and 1770 might well be applied to recall the heroic services to our State of Governor Gaspar Portolá, Don Miguel Costansó the engineer, Father Juan Crespi, and the President Father Junípero Serra.

Very respectfully submitted,

GEORGE DAVIDSON.

SAN FRANCISCO, November 8, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

*Dear Sir:* Your reply of October 27th to my letter of July 15th, regarding resolutions to name a mountain peak after Junipero Serra, adopted by the Grand Parlor of the Native Daughters of the Golden West, has been received by me.

I have read with particular attention the report of Professor Davidson, and sincerely thank the Sierra Club for the suggestion he embodies therein.

His report shall be considered by the committee together with other suggestions that have been received.

With appreciation of your courtesy, I am,

Yours very truly,

LILLY O. REICHLING DYER,

*Chairman committee naming mountain peak.*

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WASHINGTON, D. C., June 7, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

*Dear Sir:* I have to acknowledge, with many thanks, your courteous note of May 31st, in which you inform me of my election as an Honorary Vice-President of the Sierra Club. It gives me great pleasure to accept the position, and I beg that you will express to the Board of Directors my appreciation of the honor which has been done me.

Very truly yours.

GIFFORD PINCHOT.

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STANFORD UNIVERSITY, Sept. 14, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

*Dear Sir:* Your kind letter notifying me of my election as Honorary Vice-President of the Sierra Club I find on my desk on my return from Europe. I take pleasure in accepting the honor, and I feel that it is a great one. As a member of your Board of Directors I was able to do but little on account of the great pressure of my duties here and of outside matters in which I am interested. At the same time, I have the deepest interest in the work of the Sierra Club, and doubt if any other society to which I belong comes as near to my heart as that. Perhaps I should have found it necessary to attend meetings oftener if I had not found the Board of Directors always so admirably competent.

Very truly yours,

DAVID S. JORDAN.

EDITORIAL DEPARTMENT THE CENTURY MAGAZINE,  
NEW YORK, May 29, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

*Dear Sir:* I take great pleasure in acknowledging receipt of your letter of the 18th of May informing me that I have had conferred upon me the honor of election as one of the Honorary Vice-Presidents of the Sierra Club.

My very great and sincere interest in the work of the Club and my admiration for its accomplishment in various directions make me appreciate fully the compliment that has been paid me in this election, and I beg to convey my thanks and respects to the Board of Directors.

Respectfully yours,

ROBERT UNDERWOOD JOHNSON.

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VIENNA, AUSTRIA, May 20, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

*Dear Sir:* I beg to acknowledge with much appreciation the receipt of the courteous invitation extended by you on behalf of the Sierra Club to accompany you as your guest on your Fifth Annual Outing. The trip which you have so carefully planned is one in which I should take great pleasure, if I might be privileged to share in introducing your members to the grand old peak that I have so long known and which still stands first in my affections among the mountains of three continents. I fully indorse the statement which you quote from the Hon. James Bryce regarding the noble form and peculiar charm of Mt. Rainier; and sympathizing heartily with the objects of the Club, I the more deeply regret that I am prevented by pressing scientific work from joining you.

Permit me to wish the Club and its guests the fullest enjoyment of the delightful outing planned. Pardon me if I add a word of caution against the loose, treacherous volcanic rocks, so different from the firm granite of the Sierras, even in the Tatoosh Range.

And believe me, with sincere appreciation, yours truly,

BAILEY WILLIS.

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THE GRAND CAÑON OF THE TUOLUMNE.

SAN FRANCISCO, Aug. 21, 1905.

SECRETARY SIERRA CLUB, San Francisco, Cal.

*Gentlemen:* I take pleasure in communicating to you the fact that your canister No. 5 and its inclosed scroll of names deposited in the cairn on the ridge back of Muir Gorge in the Grand

Cañon of the Tuolumne was in good order on the 10th inst., when I passed that point. I opened the canister, perused the contents, signed my name, and replaced it in its resting-place, taking care to add a rock as a seal to prevent the canister falling out or being drawn out by an inquisitive coon or trader rat.

At that date the signatures were as follows: 7/26, '94—Messrs. Price, Solomons, Brann, Bonner, Colby; 8/12, '97—Mr. and Mrs. R. M. Price; 7/22, '04—Messrs. Parsons, Lawson, Haskell, Rodman, McDuffie, Lasell, Avery, Tappaan, Houze, Kimball, Badè, Hart, Cahn, Knapp; 8/10, '05—S. L. Foster.

I had a very enjoyable though at times rather strenuous trip alone, carried ten days' provisions and blankets, missed no meals nor night's rest, caught all the trout I desired to eat, spent four and a half days between Tuolumne Meadows and Muir Gorge and two days between the latter place and Hetch-Hetchy Valley.

I do not consider it a hard trip at all if proper provisions are made for it. The scenery, both as to water and rock effects, is extremely gratifying, and the continuous total absence of be-civilizing air is even more enjoyable.

I went to Yosemite Valley by stage, to Tioga Road via Yosemite Falls trail, and Indian Cañon by horseback, and thence on foot through to Crocker's via Lake Tenaya, Tuolumne Meadows, Tuolumne Cañon, and Hetch-Hetchy Valley. I was absent fourteen days from San Francisco.

Any one making this trip will find the account in volume I, number 6, of the *SIERRA CLUB BULLETIN* of 1895 of the greatest value, and a typewritten copy of the essential descriptions and instructions should be carried. Professor Badè's very interesting article in volume V, number 4, of the *BULLETIN* for 1905 should also be read before going for inspiration and after returning for reminiscences.

Two statements in the former account (*I BULLETIN* No. 6), however, seem to need a word of explanation, as I was misled slightly by them.

The north side of the river is recommended, but one must use his own judgment in this matter, as it will be found that there are many long stretches on the south side more practicable than corresponding distances opposite on the north side. I made four or five fords a day during the trip, not counting a crossing over a sixty-foot tree-trunk entirely spanning the river above the series of five waterfalls coming down the south wall of the cañon below Return Creek, and another over the flat base of an immense cone-shaped boulder inverted and bridging the roaring stream below Pait Valley.

For these numerous fords I carried a waterproofed canvas bag weighing three quarters of a pound, which, when properly



filled with my impedimenta, became a boat, leaving me free to wade or swim.

The trip from Muir Gorge to Hetch-Hetchy Valley is spoken of in the BULLETIN as "long and tedious," whereas I found it delightfully easy compared with what preceded, and in consequence its variety of charms was the more enjoyed. If still sound, I should look with great disfavor upon leaving the cool, trout-filled, down-grade river, with its generous sprinkling of cascades, rapids, long pools, and meadows below Pait Valley, either afoot or on horseback, for the hot, dry climb up the uncertain rocky trail 3,100 feet to the Tioga Road as advised in the BULLETIN article referred to. It was an easy one day's tramp from Pait Valley to Hetch-Hetchy Valley, and another less easy one day's tramp out to Crocker's, full of interest all the way.

The trout in the cañon bit at brown hackle, black fly, and red ant flies morning, noon, or night, but I caught four fish on a No. 6 Wilson spoon at the end of my leader to every one I caught on a fly.

When the grand Kolana Rock of Hetch-Hetchy Valley finally loomed up ahead about half a day out of Hetch Hetchy near the end of my cañon tramp I felt as relieved and delighted as if I had seen at the end of a long ocean voyage the well-known Twin Peaks of my native city, or as the Greeks under Xenophon did when they again beheld their well-loved sea, with the difference that I wanted to remain there indefinitely. It was with keen regret that I left my last camp among the pines, the rapids, the cliffs, the trout, the sunshine, and the other wild and refreshing charms of primeval nature in the Grand Cañon of the Tuolumne.

Very truly yours,

S. L. FOSTER.

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MEMORIAL OF THE SIERRA CLUB OF CALIFORNIA TO THE PRESIDENT AND CONGRESS OF THE UNITED STATES IN RELATION TO THE RECESSION OF THE YOSEMITE VALLEY AND THE MARIPOSA BIG TREE GROVE TO THE UNITED STATES BY THE STATE OF CALIFORNIA.

*The Sierra Club of California respectfully presents the following memorial to the President and Congress of the United States:*

WHEREAS, The Legislature of the State of California has passed "An act [copy appended hereto] to recede and regrant unto the United States of America the 'Yosemite Valley' and the land embracing the 'Mariposa Big Tree Grove,'" which act was duly approved by the Governor of said State March 3, 1905;

WHEREAS, In 1864 the little known and at that time recently



discovered "Yosemite Valley" was granted in trust to the State of California by Congress, "to be held for public use, resort and recreation";

WHEREAS, In 1890 the "Yosemite National Park," entirely surrounding the "Yosemite Valley," was created by Congress;

WHEREAS, The "Yosemite Valley" embraces but fifty-six square miles, which is situated in the very heart and center of the Yosemite National Park, which embraces over one thousand square miles;

WHEREAS, There has thus been created an "imperium in imperio" which has already given rise to unnecessary friction and expenditures, by reason of the two jurisdictions;

WHEREAS, Had the "Yosemite Valley" grant not been in existence at the time of the creation of the Yosemite National Park, the idea of carving out of the heart of the National Park a small tract like the "Yosemite Valley" and placing it under a separate jurisdiction would never have been proposed;

WHEREAS, This illogical situation exists, which is detrimental to the interests of both parks, to remedy which the State passed the act receding the valley in order to place the entire park under one jurisdiction;

WHEREAS, The "Yosemite Valley" is the natural and strategic, as well as the scenic, center of the National Park, with all its roads and most of its trails leading directly to the valley;

WHEREAS, The Federal authorities in charge of the National Park will always be hampered in their administration of the National Park until they acquire jurisdiction of the valley;

WHEREAS, The Yosemite Valley is now of world-wide interest and is "national" in importance, its natural wonders being of such magnitude that they would be better and more appropriately cared for and preserved under national ownership and protection;

WHEREAS, The Yosemite Valley is not now as accessible to the traveling public as it should be, nor is there sufficient hotel accommodation, nor are there satisfactory roadways and trails within the valley itself;

WHEREAS, The Federal Government is in a better position to bring about these very desirable improvements than is the State of California, as is evidenced by the magnificent results which have been accomplished in the Yellowstone;

WHEREAS, The Honorable Secretary of the Interior and all of the recent superintendents of the National Park have strongly advocated the transfer;

WHEREAS, The State Board of Trade and all of the important local Boards of Trade, Merchants' Exchanges, and Chambers of Commerce throughout the State of California, the American Forestry Association, the California Water and Forest Association,

the State Sempervirens Club, The California Club, and The Outdoor Art League have adopted resolutions favoring recession;

WHEREAS, Over one hundred newspapers, including all the leading newspapers throughout the State, without regard to political affiliation, have, by editorial comment, favored recession, while only two were opposed, thus indicating that the people of the State are overwhelmingly in favor of recession;

Therefore, The Sierra Club memorializes the President and Congress of the United States to pass such laws as may be necessary to accept the "Yosemite Valley" and the "Mariposa Big Tree Grove," in accordance with the terms of the said act of recession by the State of California.

JOHN MUIR, *President.*

A. G. McADIE, *Vice-President.*

J. N. LE CONTE, *Treasurer.*

WM. E. COLBY, *Secretary.*

GEORGE DAVIDSON,

WM. R. DUDLEY,

J. S. HUTCHINSON, JR.,

WARREN OLNEY,

E. T. PARSONS,

*Board of Directors of the Sierra Club.*

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[APPENDIX.]

*An Act to recede and regrant unto the United States of America the "Yosemite Valley," and the land embracing the "Mariposa Big Tree Grove."*

(Approved March 3, 1905.)

*The People of the State of California, represented in Senate and Assembly, do enact as follows:*

SECTION 1. The State of California does hereby recede and regrant unto the United States of America the "Cleft" or "Gorge" in the granite peak of the Sierra Nevada Mountains, situated in the county of Mariposa, State of California, and the head-waters of the Merced River, and known as the Yosemite Valley, with its branches or spurs, granted unto the State of California in trust for public use, resort, and recreation by the act of Congress entitled "An act authorizing a grant to the State of California of the Yosemite Valley, and of the land embracing the 'Mariposa Big Tree Grove,'" approved June 30, 1864; and the State of California does hereby relinquish unto the United States of America and resign the trusts created and granted by the said act of Congress.

SEC. 2. The State of California does hereby recede and regrant unto the United States of America the tracts embracing what is known as the "Mariposa Big Tree Grove," granted unto the State of California in trust for public use, resort and recrea-

tion by the act of Congress referred to in section 1 of this act; and the State of California does hereby relinquish unto the United States of America and resign the trusts created and granted by the said act of Congress.

SEC. 3. This act shall take effect from and after acceptance by the United States of America of the recessions and regrants herein made, thereby forever releasing the State of California from further cost of maintaining the said premises, the same to be held for all time by the United States of America for public use, resort and recreation, and imposing on the United States of America the cost of maintaining the same as a National Park. *Provided, however,* that the recession and regrant hereby made shall not affect vested rights and interests of third persons.

## BOOK REVIEWS.

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 EDITED BY WILLIAM FREDERIC BADÈ.
 

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"A GUIDE TO  
THE STUDY  
OF FISHES."

President David Starr Jordan of Stanford University is without doubt our leading American authority on fishes. This monumental work\* is splendid evidence of his industry, perseverance, and scientific acumen. It is not often that one comes across a work so satisfying in every way. Were it not for the fascinatingly written subject-matter, of equal interest to the technical student and to the angler, a reviewer might be appalled by the size of these two sumptuous octavo volumes. They embrace more than twelve hundred pages, profusely illustrated in white-and-black and in half-tone, and the frontispiece of each volume shows in colors some of the remarkable fish brought by the author from his Pacific explorations. The following titles of chapters, selected at random from the first volume, will indicate the interesting character of the contents: "The Organs of Respiration," "The Organs of Sense," "Instincts, Habits, and Adaptations," "Colors of Fishes," "Fishes as Food for Man," "The History of Ichthyology," "The True Sharks," etc. Even "The Mythology of Fishes" has not been overlooked. Among other things the author, in the last-mentioned chapter, refers to the popular superstitions about mermaids: "In China small mermaids are very often made and sold to the curious. The head and torso of a monkey are fastened ingeniously to the body and tail of a fish." The manufacture of these "curios has long been a profitable industry in the Orient." In a brief discussion of the sea-serpent myths Dr. Jordan, while disposed to regard most of the stories as mere sailors' yarns, or stories resting on incorrect observation, suggests that some of them may relate to real fishes. Thus "the sea-serpent with an uprearing red mane like that of a horse is the oar-fish (*Regalecus*), a long, slender, fragile fish compressed like a ribbon and reaching a length of 255 feet." Very interesting is the photograph of a specimen of this genus (Vol. I, p. 362), stranded on the California coast at Newport, in Orange County. The recently discovered frilled shark (*Chlamydoselachus angineus*, pictured

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\* *A Guide to the Study of Fishes*. By DAVID STARR JORDAN. Two colored frontispieces and 936 illustrations. 2 vols.; pp. xxvi, 624, and xxii, 598. Published by Henry Holt & Co., New York, 1905. 8vo. Price, \$12 net.

Vol. I, p. 525, not 523 as per index) may also be responsible for some of the stories.

But the California angler, among all this wealth of information set forth with such charming clarity, instinctively turns to the two chapters (in Vol. II) on the *Salmonidae*. Under the sub-heading "The Trout of Western America" the author presents a masterly discussion of these living arrows of the white water. It is a long list of species that answers to his roll-call. "In the western part of America are found more than a score of forms of trout of the genus *Salmo*, all closely related and difficult to distinguish." Dr. Jordan distributes the various species among three series, the cut-throat trout, the rainbow trout, and the steel-head series. He deems it probable that the American trout originated in Asia, extended its range to southeast Alaska, and thence spread southward. If it is true that the progenitors of a part or all of the aboriginal population of North America came across Bering Straits, or by way of the Aleutian Islands, we would have here an interesting parallel of human to piscine migration. Sierra Club members will be interested to learn that the small-scaled King's and Kern River trout flourish under the name *Salmo irideus gilberti*. This beautiful form of trout therefore is linked with the name of Professor Charles H. Gilbert, of Stanford University, the lifelong associate of the author in the study of ichthyology. During the Club Outing of 1903 the journey to Mt. Whitney was made especially memorable by the famous golden trout of Volcano Creek. President Jordan gives this description of them in his work (Vol. II, p. 99): "In the head-waters of the Kern, in a stream called Volcano Creek or Whitney Creek, the waterfall sometimes called Agua-Bonita shuts off the movements of the trout. Above this fall is a dwarf form with bright golden fins, and the scales scarcely imbricated. This is the golden trout of Mount Whitney, *Salmo irideus agua-bonita*. It will possibly be found to change back to the original type if propagated in different waters."

In the preceding chapter the reviewer has called attention to only a few items of general and immediate interest. Many large questions raised in these chapters must go unmentioned for want of space. Among them is the question which concerns the probable evolution of fishes from some unknown, perhaps lamprey-like, ancestor. There was one class of primitive fishes known as Crossopterygians, of which but two families of few species survive—all of them apparently in Africa. They united within themselves traits of the shark, lung-fish, and ganoid. Our author is of the opinion that from these "Crossopterygians, or their ancestors or descendants by the specialization of the lung and limbs, the land animals, at first amphibians, after these reptiles,

birds, and mammals, arose." The publishers have done their part to make the book attractive by the use of heavy paper, generous margins, large print, and, above all, by the general excellence of the illustrations. No modern Isaak Walton can afford to remain without this thesaurus of most varied piscine lore.

W. F. B.

"VOYAGES  
DANS LES  
ALPES."

The true Alpinists, lovers of Nature in her primeval beauty and grandeur, seek untrodden trails, and love to taste the triumphs of "first ascents." These will find piquant pleasure in this volume of excerpts from the writings of de Saussure, the early Swiss mountaineer, scholar, scientist, and artist in his depictions of the grandeur, magnificence, and unsophisticated freshness of the European Alps of his day, 1740-1799. This volume has been lately presented to the Sierra Club Library by our esteemed member Harrington Putnam, of New York.

I venture to quote from the critique on this work written by the noted Swiss, R. Topffer, and reprinted in this, the edition of 1852, from the "Bibliothèque Universelle de Genève," September, 1834:—

"How curious a thing, how strange a destiny that the man who has best known and comprehended the Alps, almost the only one who has sustained their character and grandeur in his style, was a scholar and student, a man of the barometer and hygrometer; and that, among so many artists, so many poets, visiting the same places to sing and paint, not one has been qualified to equal him or to approach him even at a distance.

"De Saussure, who traversed the Alps to study their physics and their natural history,—that is to say, with a serious purpose, mind receptive, and body active,—took as an additional benefaction the charm of the country, the beauties of the wayside, the lively and novel experiences that accompanied his work; and at evening, on his summit, in his cabin content, permeated with it all, he penciled his journal; then, into the pauses of science slipped descriptions, memories, and observations of the day; then a thousand features, true because not sought, picturesque and poetic because they were true, took form under his pen; and without intention he traced a faithful picture, naïve and glad-some, wherein is reflected simultaneously the grand scenes which surrounded him and the impressions which dominated him.

"Do not conclude, however, from what precedes, that it is sufficient to be a geologist or a naturalist in order to be the painter of the Alps; to have a staff in hand, a barometer in pocket. It is not even sufficient to have, as de Saussure, a passion for the mountains, the most pronounced alpine vocation, the body inured to fatigues, the taste to enjoy mountaineering, to make it one's recreation and delight. With all that, one can still write a sorry book; without that, one can write a good one. But to all that

\* *Voyages dans les Alpes*. Partie Pittoresque des Ouvrages de H.-B. DE SAUSSURE. Joël Cherbuliez, Editeur. Paris. 1852.



MONUMENT TO DE SAUSSURE AT CHAMONIX.

1704 W



material of his expeditions, if I may so express it, de Saussure united in a high degree the qualities of mind and character which, in all times and on any subject, make a writer interesting and distinguished, those which, both from the form and from the style, attract most the sympathy of the reader, and captivate the best, his attention.

"That which I admire in these pages is that spirit of observation, at once lofty and naïve, grave and good-natured, which comprehends the grand features, and does not disdain the lesser details; that curiosity, philosophical and at the same time gentle and smiling, which finds agreeable food about the rustic homes seated on the flanks of the Mole, as well as grand reflections in face of the icy solitudes of Mont Blanc; that imagination sufficiently rich, sufficiently elevated to find always enough food in the exact reality without exaggerating the beauties, without transforming the accidental into phenomena, the curious things into marvels, the singular into a miracle.

"But with de Saussure the love of truth dominates and tempers the most brilliant faculties, and in his description and poetry is displayed the same fidelity, the same candor, as in his science—a thing very rare, a phenomenon very curious, unique with him.

"That which interests me in these pages, in addition to the traits I have already remarked, is an undefinable vigor, simple and mature, displayed in the habits, in the tastes, and in the methods of the traveler. That scholar, rich, accustomed to the good things of life, as soon as he approaches his cherished mountains grasps the knotty staff, relies on his seasoned muscles, becomes a man of Chamouni, and in a country without hotels and without resources adopts without disdain, with pleasure, the rustic food and the rough shelter of his companions which he has chosen. There is enough pure, active, elevated pleasure to recompense him for some privation. He knows moreover the grand secret that all know, but that few put into practice: appetite is in the heights; repose, soft, sound, and sweet, is in the heights; it is only necessary to go there to seek them. If it is noble to know enough to prefer intellectual enjoyment to the ease of a life of wealth, it is also noble to know how to exchange lazy recreations for laborious pleasures. Since de Saussure the trails are mapped out, hotels are opened even on the summits, mules and litters have penetrated everywhere, and the grand secret, preserved with the initiated few, is lost for the general.

"That which pleases and delights me is to see a man unlike myself, a superior intellect, recreate himself in my way, an illustrious scholar enjoy the things that please me, and, in thus placing himself in my class, sanction my manner of enjoyment. Even more,—it is possible to learn from a guide so distinguished how to travel, how to observe, how to interest one's self, how to find in Nature so many charms, so much grace, so much freshness, so much mystery; how the discovery of an alpine plant which blooms isolated at the edges of the eternal snows moves and rejoices as much and more than a spectacle obtained at great expense.

"As for me, what I say here is less the praise of its truth than of its information; and for fifteen years that I have gone to the mountains to greet the glorious days I have taken there to enjoy only the little I have been able to grasp in this book, and that little has been for me a great wealth.

"What I love in these pages, what attracts me to their author, is the sentiment of benevolence and humanity which always animates de Saussure toward the poor mountaineers among which he lives; that gentle and cheerful goodness with which he meets those people, excusing their prejudices, compassionating their harsh fatigues, appreciating the excellent qualities covered by their coarse exteriors. He converses with his guides, he interests himself on their behalf, he makes himself their friend, he does not consider that mere money pays for the respect, the devotion, the affection of those simple hearts who give themselves to him. Nobility as true as rare, token of an admirable soul, of a sane heart, of a character upright and good.

"These things move me, for they have become rare, if they were not always so. For so many who are merely rich the pride of wealth alone is enough to make them exacting, harsh, and haughty toward the poor people they employ; but this man, rich too,—and more, a scholar,—and more, celebrated,—found it easy to be the friend of those who loved him, and on the mountains to be the equal of mountaineers.

"Finally, that which distinguishes these pages, that which will place them always at the head of all that have been written on these particular regions, is the charm of novelty, the force and movement of discovery. The fresh, pure color of a still virgin nature is there felt throughout. And this charm one only can perceive and describe who, as de Saussure, is the first to penetrate unknown valleys; the first to there discover magnificent treasures reposing since the creation, surprising among remote peoples antique ways, touching customs, a thousand naive traits, already tarnished when noticed, lost when admired, and which certainly it is useless to seek to-day in these beautiful valleys."

E. T. P.

"THE PRINCESS *A charming novel of travel in the Alps is The Princess Passes,\** by C. N. and A. M. Williamson. In its early chapters one renews acquaintance with the famous "Lightning Conductor," his automobile and his wife. Later the hero of this book, Lord Lane, combines a walking trip across the Saint Bernard Pass and into Chamounix, with a love-story rather suggestive of "Twelfth Night" in some of its complications.

To one accustomed to mountaineering, some of the hardships and perils described will have an effect very different from what the authors intended. The picture of the pedestrian who finds it "impossible to improvise a dressing-room in the neighborhood of the pump" for the putting on of a clean collar would be amusing if it were not pathetic; and the ardors of the climb of Mont Revard would seem very awe-inspiring if we had not a gauge of its difficulty in the ease with which the muleteer gets his beasts to the summit.

One interesting aspect of the book is the association of historic

\* *The Princess Passes.* By C. N. and A. M. WILLIAMSON. Henry Holt & Co., New York. \$1.50.

scenes with the mountains—an association which plays so large a part in the charm the very name of the Alps has for us. "St. Bernard had me at his feet and held me there," says Lord Lane. "This strange, unkempt Pass, this Great St. Bernard seemed a secret way back into other centuries, savage and remote. . . . There was the old Roman road along which Napoleon had led his staggering thousands. . . . Farther and farther back into the land of dead days I journeyed with St. Bernard, and helped him found the monastery which the eyes of my flesh had not yet seen."

This volume, presented to the Club library by Mr. E. T. Parsons, will be found to be very entertaining reading. M. R.

"A HANDBOOK OF THE TREES OF CALIFORNIA." A book that will be welcomed by members of the Sierra Club is Miss Eastwood's *Handbook of the Trees of California*,\* a recent publication of the California Academy of Sciences.

The first issue includes a special edition of "five hundred copies, numbered and signed by the author." On previous occasions Miss Eastwood has placed students of California's diversified flora under obligation by the published results of her work. One of these appeared as No. 27 among the Sierra Club's publications in 1902, and was entitled "A Flora of the South Fork of King's River." This proved so useful to botanically interested members of the two Sierra Club outings to the King's and Kern River cañons that they will not be slow to avail themselves of this new aid to their studies. It is a popular but scientifically accurate vade-mecum. As the title indicates, it limits itself to the *trees* of California, but this limitation has the advantage of enabling the author to bring the whole State within the scope of a conveniently portable manual. A striking feature of the book consists of a profusion of finely executed half-tone plates, many of them made from drawings left by Dr. Albert Kellogg. These illustrations cannot fail to be of great assistance to the amateur student. Naturally Miss Eastwood was obliged to make the rather difficult distinction between a tree and a shrub. Among California shrubs there are many ambitious candidates aspiring to rank as trees, and not a few of the arboreal aristocracy have fallen from their quondam estate through progressive change of environment. To quote the author, "In general a tree differs from a shrub in having a distinct trunk some distance above the ground, and in being not less than fifteen feet high. Where the species is only rarely a tree and generally a shrub it has not been

\* *A Handbook of the Trees of California*. By ALICE EASTWOOD. Published by the California Academy of Sciences. No. IX. San Francisco, 1905. For sale at Robertson's, Elder's, and elsewhere. Price, paper bound, \$2; leather bound, \$2.50.

included, so that many species of *Ceanothus*, many of the manzanitas, the sumachs, and many others have been omitted." (Here is room for another manual.)

In a few pages of pithy introductory discussion the author rightly emphasizes the beauty, variety, and grandeur of California's forest vegetation. The fame of the State is in large measure the fame of her "Big Trees"—the first interest of the tourist and sojourner. But who could overlook the eighteen species of pine described in text and illustration, or even such beautiful rarities as the mountain mahogany and *Lyonothamnus* of Santa Catalina Island? A most valuable feature of the book is the author's key to the families of the trees. With this, as well as two additional keys based upon the fruits and leaves respectively, it ought to be no difficult matter for any lover of trees to determine the identity of a species.

W. F. B.

ANNUAL REPORT OF THE SMITHSONIAN INSTITUTION. 1904. The Club library is in receipt of a copy of the *Report of the Smithsonian Institution for 1904*. Among many interesting articles, special mention should be made of one by Douglas W. Freshfield, entitled "On Mountains and Mankind." It is a fresh and suggestive discussion of the fascination which mountains have exerted over the mind of man from the earliest times. In the original form the article was an address delivered before the Cambridge Meeting of the British Association in 1904.

W. F. B.

## FORESTRY NOTES.

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EDITED BY PROFESSOR WILLIAM R. DUDLEY.

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**THE YOSEMITE.** The last Congress took no formal action accepting the responsibility and management of the tracts known as the Yosemite Valley and the Mariposa Big Tree Grove, which were returned to the United States by the action of the late California Legislature. President Roosevelt and the Forestry Service have been thoroughly in sympathy with this movement to consolidate the management of the lands in the vicinity of the Yosemite. The former, therefore, in his annual message to the present Congress in December, made the following recommendations:—

"I call your attention to the generous act of the State of California in conferring upon the United States Government the ownership of the Yosemite Valley and the Mariposa Big Tree Grove. There should be no delay in accepting the gift, and appropriations should be made for the including thereof in the Yosemite National Park, and for the care and policing of the park. California has acted most wisely as well as with great magnanimity in the matter. There are certain mighty natural features of our land which should be preserved in perpetuity for our children and our children's children. In my judgment the Grand Cañon of the Colorado should be made into a national park.

"It is greatly to be wished that the State of New York should copy as regards Niagara what the State of California has done as regards the Yosemite. Nothing should be allowed to interfere with the preservation of Niagara Falls in all their beauty and majesty. If the State cannot see to this, then it is earnestly to be wished that she should be willing to turn it over to the National Government, which should in such case (if possible, in conjunction with the Canadian Government) assume the burden and responsibility of preserving unharmed Niagara Falls; just as it should gladly assume a similar burden and responsibility for the Yosemite National Park, and as it has already assumed them for the Yellowstone National Park. Adequate provision should be made by the Congress for the proper care and supervision of all these national parks. The boundaries of the Yellowstone National Park should be extended to the south and east to take in such portions of the abutting forest reservation as will enable the Government to protect the elk on their winter range."

The Secretary of the Interior in his report also strongly recommends the acceptance of the retroceded tracts as follows:—

"Aside from the objections which are inseparable from a disputed and divided jurisdiction over an area which naturally

forms but one great park, the necessity for the establishment of a suitable and convenient post or camp for the troops; for the adoption of a comprehensive system of patrols in the valley and the park; for the protection of both parks against destructive fires; the construction of an adequate system of free public roads leading to the valley; the building therein of ample hotel and other accommodations for visitors, as well as the safe-guarding of the valley from the granting of unwise and extravagant concessions—all these things seem to call imperatively for immediate action on the part of the National Government; and I cannot too strongly urge upon Congress the importance of at once adopting measures which will set at rest any question as to the purpose of the United States to accept the retrocession by the State of California of the Yosemite Valley and the Mariposa Big Tree Grove, and thus preserve the entire country embraced in these parks for public use and recreation forever.

"It is further recommended that, for administrative purposes in the management of the Mariposa Big Tree Grove, a parcel of land of approximately one mile in length and two miles in width, immediately south of the Yosemite National Park and abutting the Big Tree Grove on the north, be included within the metes and bounds of the Yosemite National Park and made a part thereof."

It would be quite appropriate to also bring the Fresno Big Tree Grove, some miles south of the Mariposa Grove and over the Mt. Raymond divide, under the same management.

Early in December Senator Perkins of California introduced into the Senate a bill embodying the recommendations of the President regarding the Yosemite.

**FOREST RESERVES.** In the August number of *Forestry and Irrigation*, A. F. Potter, of the Forestry Service, summarizes the present extent of the California forest reserves, the work being done upon them, the amount of grazing allowed, and the character of the new reserves added since January 1, 1905. The old reserves, chiefly in the mountains of Southern California and along the Sierra Nevada from Lake Tahoe southward, amounted to less than 10,000,000 acres. The new California forest reserves are six in number, are located in Northern California, and swell the total amount in the State to 14,250,000 acres. Mr. Potter states that this is "an acreage almost double that included in any other State or Territory. There still remains withdrawn from entry a large area from which it is probable several additional reserves will be created, so that ultimately the National Forest Reserves of California will include about 16,000,000 acres of land."

The general situation of the new reserves was given in the pages of the BULLETIN in the numbers for February and June, 1903. The land had then been recently withdrawn from sale and entry preparatory to expert examination, and the reserves were

intended to protect the head-waters of the Sacramento and its tributaries and the Klamath and its tributaries. Of these reserves the Modoc and the Warner Mountains reserves are in the northeastern part of the State, the Klamath and Trinity reserves cover portions of the watershed of these rivers respectively, while the Plumas and Lassen Peak reserves occupy the northern extension of the Sierra Nevada and the southern part of the great lava region in Plumas and Lassen counties. A seventh, the Mt. Shasta Forest Reserve, twelve townships from Mt. Shasta south-westward, was created in October, 1905. The boundaries of these reserves "have been drawn so as to include only lands suited to forest reserve purposes." The bitter opposition in 1902 to the proposed reserves will be recalled perhaps. It was apparently local, but was probably wholly due to the paid agents of certain lumber interests foreign to California, which were interrupted in their plans, already well advanced, for rapidly monopolizing the valuable stands of timber in Northern California through misuse of our several unfortunate land laws. The movement of capital from the exhausted white-pine land of Minnesota to Northern California was begun as early as 1899. The writer, who had traveled through these forests in that year, endeavored to interest the Interior Department in a reservation of the public forest domain from Nevada County northward to include the head-waters of all the Sacramento tributaries. A resolution to that effect was accepted and adopted in the meeting of the American Forestry Association, which met at Los Angeles that year, but the right time to check the vast amount of fraudulent acquirement of these lands by Eastern lumbermen passed without any movement on the part of Binger Hermann, then Commissioner of the General Land Office, now under indictment for conspiracy with minor land speculators to defraud the United States; and it is difficult to see how any of the forest land now included in at least four of the Northern California reserves could have been saved from private greed, except for the opportune interest and action of President Roosevelt in 1902. That these private interests have attained a powerful hold on Northern California, and that their influence is a thing to be constantly reckoned with, is evidenced by the protest of State Mineralogist Aubury to the General Land Office, published in December, 1905, stating that an effort is now being made at Washington, through the agents of these few land monopolists, to have seven townships segregated from the reserve in Plumas County. It also states that the work of acquiring an enormous amount of small holdings, evidently for timber purposes, through a fraudulent use of the placer-mining laws is still being carried forward by an old offender, H. H. Yard. As an illustration of the extent



to which the land laws have been turned to a use not at all intended by their framers, it is stated that in seven Plumas County townships the property of the settlers and miners amounts to only 19,244 acres, as against 34,094 acres claimed to have been acquired under the land laws in two years by a few land speculators. Among them are Thomas B. Walker, conspicuous since 1898-1899 in such enterprises in Northern California, and William E. Wheeler. These few men have continued their operations with particular tenacity in Plumas County on account of the expected enhancement of timber-land values after the completion of the Western Pacific Railroad. Whatever the outcome, Messrs. Aubury and Edman deserve well of the public in voicing vigorously the injury done the real miner by these monopolistic encroachments. If there is fraud in the method of the acquirement, their protest may result in an investigation on the part of the Government such as has been successfully inaugurated during the past year in Oregon.

Other States have also been favored in the establishment of new forest reserves, until we now have over 100,000,000 acres set aside under this head in the Western States and Territories.

In October of the present year 343,000 acres were withdrawn from the public domain in the heart of Monterey County, in preparation for the proposed Santa Lucia Forest Reserve. It has been already pretty thoroughly inspected. It concerns the water supply of the Carmel River and of the Arroyo Seco and other streams contributory to the Salinas Valley water supply.

**REFORESTATION.** The zeal of the United States Forestry Service since the reserves were placed under their supervision by the last Congress has been displayed in many pieces of work but little known to those who do not read the forestry journals and the Service publications. In no direction has it been more active than in experiments in reforestation of denuded or chaparral areas in the semi-arid States. In California this work has been chiefly confined to the south, where thousands of pine seedlings have been planted; but reforestation has been undertaken near Mt. Shasta. In Colorado, New-Mexico seedlings are being raised by the million for this purpose. Experts have been brought from the English service, where reforestation has been practiced for a long time, and the subject of replanting the denuded areas in the California reserves has been taken up with the President by Senators Perkins and Flint.

**STATE FORESTER.** The Governor of California appointed Edward T. Allen as State Forester under the new Forestry Law. He took up his new duties in July. The appoint-



ment was made with much care and has everywhere been well received. He was long familiar with the forests of the Pacific Coast, his father being a well-known naturalist living for many years in the vicinity of Mt. Rainier. He is a trained forester, as the law requires, and was taken from the United States Forestry Service, when appointed to his present position. He no doubt has a great opportunity; but the people of the State have a greater one, and an even greater duty, in sympathetically aiding and supporting their Forester.

PUBLICATIONS. The American Forest Congress in January, 1905, was a remarkable gathering in many ways. It was one of the very few gatherings of specialists when a President of the United States has entered the assembly as a speaker. The proceedings of the Congress have been published in a single volume by the American Forestry Association.

While *Forestry and Irrigation*, the organ of the American Forestry Association, is perhaps well known to many readers of the BULLETIN, probably few see the *Forestry Quarterly*, a journal largely for the professional forester, but containing many articles of a non-professional character. In number three of this year Mr. E. A. Sterling gives an account of forest legislation in California. He finds "that the recently enacted forest legislation in California is the nearest approach to a model forest code yet made and furnishes a foundation for a more perfect system than has been inaugurated in any State." The *Quarterly* has many reviews of articles and books relating to forestry both in America and in foreign countries. Dr. B. E. Fernow is the editor-in-chief, and Professors Graves, Fisher, and Roth, respectively the heads of the forestry instruction at Yale, Harvard, and Michigan, are upon the board of editors. The journal is two dollars a year, and published at Ithaca, N. Y.

